1 UNITED STATES PATENT AND TRADEMARK OFFICE

2 _____

3 BEFORE THE PATENT TRIAL AND APPEAL BOARD

4 _____

5 AMAZON.COM, INC. and AMAZON.COM SERVICES LLC,

6 Petitioners,

7 V.

8 NOKIA TECHNOLOGIES OY,

9 Patent Owner.

10 _____

11 IPR2024-00847, IPR2024-00848

12 U.S. Patent No. 7,532,808

13 _____

14

15 DEPOSITION OF DR. JOSEPH P. HAVLICEK

16 San Diego, California

17 Friday, February 21, 2025

18 9:09 A.M.

19

20 Job No.: 572189

21 Pages: 1-156

22 Reported by: Crystal Hereford, RPR

1 Deposition of DR. JOSEPH P. HAVLICEK,
2 conducted at the law offices of PERKINS COIE LLP, 11452
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10 Pursuant to notice, before CRYSTAL HEREFORD,
11 Registered Professional Reporter, No. 30819; California
12 Certified Shorthand Reporter, No. 14416; and Washington
13 Certified Court Reporter, No. 21004877.
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IPR2024-00848

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1 C O N T E N T S

2 EXAMINATION OF DR. JOSEPH P. HAVLICEK PAGE

3 By Mr. Verboncoeur 6

4

5

6

7

8

9 E X H I B I T S

10 (Attached to the transcript)

11 HAVLICEK DEPOSITION EXHIBIT PAGE

12 Exhibit 1 Declaration of Dr. Joseph P. Havlicek Regarding U.S. 10
13 Patent No. 7,532,808

14 Exhibit 2 United States Patent No. 7,532,808 11
15

Exhibit 3 ITU-T, H.264, 03/2005 31
16

Exhibit 4 Provisional Application, Fröjdh 71
17

Exhibit 5 Provisional Application to the '808 patent 97
18

19 Exhibit 6 International Publication Number WO 01/11891 (Karczewicz reference) 134
20

21

22

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1 P R O C E E D I N G S
2 THE REPORTER: We are going on the record.
3 My name is Crystal Hereford. My CSR number
4 is 14416.
5 Would counsel please announce your
6 appearance, starting with the taking attorney.
7 MR. VERBONCOEUR: This is Mitch Verboncoeur
8 from the law firm of McKool Smith. With me is my
9 colleague Sam Moore, also with McKool Smith. We
10 represent the patent owner.
11 MR. CARTER: And I am Jon Carter from Perkins
12 Coie. With me is my colleague Atanas Baitchev. And we
13 represent the petitioners.
14 DR. JOSEPH P. HAVLICEK,
15 a witness herein, having been first duly sworn by the
16 certified reporter to speak the truth and nothing but
17 the truth, was examined and testified as follows:
18 EXAMINATION
19 BY MR. VERBONCOEUR:
20 Q. Good morning, Dr. Havlicek.
21 A. Good morning.
22 Q. You're aware of the '808 patent?

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1 A. Yes.
2 Q. And you're aware that Amazon has filed two
3 petitions challenging the validity of certain claims of
4 the '808 patent.
5 A. I am so aware.
6 Q. And as part of those petitions, Amazon has
7 relied on a declaration that you signed in this case.
8 A. I understand that to be true.
9 Q. When you prepared for this deposition, did
10 you -- let me ask that.
11 Did you prepare for this deposition?
12 A. I did.
13 Q. How did you prepare for this deposition?
14 MR. CARTER: I'll just caution the witness
15 here not to disclose the substance of any privileged
16 communications or conversations you may have had. To
17 the extent that you can answer that question without
18 doing so, please go ahead.
19 A. In preparation for this deposition, I
20 reviewed the documents listed in the "Documents Cited"
21 table of the declaration, and I met with counsel.
22 Q. Other than reviewing the documents cited in

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1 the "Documents Cited" table of your declaration and
2 meeting with counsel, did you do anything else to
3 prepare for today's deposition?
4 MR. CARTER: Same caution to the witness.
5 A. I read some portions of a decision to
6 institute that I believe is not listed in the table.
7 Q. Thank you.
8 Did you review any other documents other than
9 the decision to institute and the documents cited in
10 your declaration in preparation for today's deposition?
11 MR. CARTER: And I'm just going to caution
12 the witness here. I think selection of documents
13 reviewed in preparation for depositions is covered by
14 the privilege of work product. If you want to ask him
15 if he reviewed anything that refreshed his recollection,
16 go ahead with that.
17 Q. I think the way I asked the question is yes
18 or no, so I don't think that it asks for the selection.
19 It's just did you review any other documents other than
20 the documents cited in your declaration and the decision
21 to institute.
22 A. I did not.

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1 Q. Which resolves the matter.
2 Other than your conversations with counsel,
3 did you talk to anyone to prepare for today's
4 deposition?
5 A. No.
6 Q. Did you learn anything from counsel during
7 your preparations for today's deposition that inform
8 your understanding of any of the opinions you expressed
9 in the declaration?
10 MR. CARTER: Object to the form of that
11 question. I'll also caution the witness not to disclose
12 the substance of any conversations that you had with
13 counsel. If you're able to answer that question without
14 doing so, you may.
15 A. No.
16 Q. I've referenced your declaration a few times
17 now. I'm going to go ahead and introduce that as an
18 exhibit.
19 And we spoke off record about this, but just
20 so that it's clear. We've also brought a computer to
21 today's deposition so that if in any case you need to --
22 or at any point you need to refer to an electronic copy

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1 of an exhibit, just let me know, and we can arrange
2 that.
3 But I'm going to go ahead, and I'll hand this
4 one to you first so that you have a copy.
5 MR. VERBONCOEUR: We'll mark this as
6 Exhibit 1.
7 (Exhibit Number 1 marked.)
8 Q. Doctor, do you recognize what's been marked
9 as Exhibit 1?
10 A. I do.
11 Q. What is Exhibit 1?
12 A. Exhibit 1 is a declaration which I submitted
13 in May of 2024.
14 Q. You mentioned that you reviewed what's been
15 marked as Exhibit 1 in preparation for today's
16 deposition?
17 A. Yes.
18 Q. Do you stand by the opinions you express in
19 the declaration you provided in these cases?
20 A. I do.
21 MR. VERBONCOEUR: I'll mark as Exhibit 2 the
22 '808 patent.

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1 (Exhibit Number 2 marked.)
2 Q. Doctor, do you recognize what has been marked
3 as Exhibit 2?
4 A. I do.
5 Q. What is Exhibit 2?
6 A. Exhibit 2 is a patent which we have referred
7 to in my declaration as the '808 patent.
8 Q. Do you understand that it's the '808 patent
9 that's being challenged in the petitions at issue here?
10 A. I have been so advised by counsel.
11 Q. Before you provided your declaration in these
12 cases, did you review the '808 patent?
13 A. I'm sorry. Could you repeat the question?
14 Q. Sure.
15 Before you provided or signed the declaration
16 that's been marked as Exhibit 1, did you read the
17 '808 patent that's been marked as Exhibit 2?
18 A. Yes.
19 Q. Was there any part of the '808 patent that
20 you struggled to understood before you signed the
21 declaration that's been marked as Exhibit 1?
22 A. Could you clarify what you mean by

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1 "understand"?
2 Q. Sure. And let me back up, maybe, so it's a
3 bit more clear.
4 You're currently a professor, right?
5 A. That is correct. Yes, sir.
6 Q. At which institution are you a professor?
7 A. The University of Oklahoma.
8 Q. What do you teach at the University of
9 Oklahoma?
10 A. I am a professor in the school of electrical
11 and computer engineering, and I teach both graduate and
12 undergraduate courses in that unit.
13 Q. Do the courses you teach at the University of
14 Oklahoma include the subject matter of video coding?
15 A. They do.
16 Q. Would you consider yourself to be a person of
17 skill in the art in video coding?
18 A. I would.
19 Q. As of 2002, would you have been a person of
20 skill in the art in video coding?
21 A. As of 2002, I would have considered myself to
22 be a person of more than ordinary skill in the art.

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1 Q. So my question is as it relates to Exhibit 2,
2 the '808 patent. When you reviewed Exhibit 2, the
3 '808 patent, as a person of more than ordinary skill in
4 the art of video coding, were there any portions of the
5 '808 patent that you found that you could not
6 understand?
7 A. Well, I found that I could understand
8 everything that was written. I'm not sure that all of
9 it was a hundred percent clearly written. But to the
10 extent that a person of ordinary skill would understand,
11 I understood. Yes.
12 Q. I'd like to ask you about a person of
13 ordinary skill in the art's understanding of some claim
14 terms in the '808 patent. Is that okay?
15 A. Yes, sir.
16 Q. And I recognize this is an interesting
17 exercise, because you're somebody of more than ordinary
18 skill. But I'm going to be asking you about what a
19 person of ordinary skill would understand from reading
20 various parts of the '808 patent. Does that make sense?
21 A. I understand.
22 And I would add that I have experience

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1 supervising and working with persons that I would
2 consider to be of ordinary skill.
3 Q. Okay. Thank you.
4 So what I'd like to do is ask you about a
5 claim term that appears in Claim 16 of the '808 patent.
6 You'll find that toward the back of Exhibit 2.
7 A. I'm there.
8 Q. Thank you.
9 The word "demultiplexer" appears in Claim 16.
10 Do you see that?
11 A. I do, if you're referring to line 56 and 57.
12 Q. That's right.
13 Column 27, line 57 -- I think. It's tough to
14 tell -- of Exhibit 2, there's the word "demultiplexer."
15 Do you see that?
16 A. I do.
17 Q. Do you believe a person of ordinary skill as
18 of 2002 would know what a demultiplexer is?
19 A. Yes.
20 Q. What understanding would a person of ordinary
21 skill in the art have of the word "demultiplexer"?
22 A. As specifically related to video coding, a

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1 person of ordinary skill would understand a
2 demultiplexer to be an algorithm or a device for parsing
3 an encoded bitstream.
4 Q. Is it your view that a person of skill in the
5 art would believe that the concept of a demultiplexer
6 was something very well known at the time in 2002?
7 A. The concept of a demultiplexer was well known
8 in 2002. Yes.
9 Q. I don't think there's any debate between us
10 here. But it's not your view that the concept of a
11 demultiplexer is somehow unique to the '808 patent.
12 A. No.
13 Q. And do you think that if a person of ordinary
14 skill in the art was seeking to create a decoding
15 technique -- you know, imagine that this person of skill
16 in the art was looking at, perhaps, one of the grounds
17 that you've raised in your declaration. Do you think
18 that they would know how to create a demultiplexer?
19 MR. CARTER: I'll object to form.
20 A. So I want to make sure that I understand the
21 premise of the question. The person of ordinary skill
22 reads the grounds that are in this declaration. And

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1 then the question is? I'm sorry. Could you...
2 Q. Yeah. And let me clarify. I used the
3 grounds as an example of various decoding techniques.
4 But my question is more general, which is: Would a
5 person of ordinary skill in the art know how to take a
6 decoding technique and implement it in a decoder using a
7 demultiplexer?
8 MR. CARTER: Object to form.
9 A. You are asking to implement.
10 Q. Correct.
11 A. So I think they might have general ideas.
12 But the specifics of the design of a demultiplexer are
13 tied intimately to the details of not only the coding
14 method but the implementation of the encoder, and so I
15 think they probably would need to know those things in
16 order to be able to design and implement a practical
17 demultiplexer.
18 Q. And let's put a pin in this one, because I
19 might circle back to this topic when we --
20 A. Sure.
21 Q. -- talk about your grounds as to whether
22 those grounds would provide that information to a person

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1 of ordinary skill in the art.
2 Now I'd like to switch claims here. And this
3 is on the preceding page of the '808 patent in
4 Column 26, line -- I apologize. It's Column 27. So
5 actually, we don't have to switch the page -- the same
6 page of the '808 patent, Column 27, the first line.
7 There is the term "multiplexer." Do you see that?
8 A. I do.
9 Q. Do you have an understanding of what a
10 multiplexer is?
11 A. Yes. And, again, I'll say I believe here
12 that we're talking about the concept of a multiplexer in
13 the context of video coding, which is a little different
14 than the general meaning of the term.
15 Q. And you've -- I'll ask about a person of
16 skill in the art's understanding, but both for the
17 "demultiplexer" term and the "multiplexer" term, I think
18 we agree that we're looking at these from the
19 perspective of a person of skill in the art in video
20 coding who is thinking of digital video as opposed to
21 something like analog circuitry.
22 A. Understood.

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1 Q. And do you agree with that proposition,
2 Doctor?
3 A. I will accept that. Yes.
4 Q. So now I'd like to ask you whether you have a
5 view of how a person of ordinary skill in the art in
6 2002 would understand the "multiplexer" term.
7 A. The multiplexer in our context is the
8 component of a video encoder which receives the syntax
9 elements that will be included in the bitstream and
10 assembles them into the encoded bitstream.
11 Q. Would a person of ordinary skill in the art
12 in 2002 know what a multiplexer is?
13 A. Generally, yes.
14 Q. Now I have a similar question with respect to
15 multiplexers as I did for demultiplexers.
16 Would a person of ordinary skill in the art
17 looking to implement an encoding technique have an
18 understanding of how to use a multiplexer?
19 MR. CARTER: Object to form.
20 A. I will ask for a clarification and be
21 specific, in that I believe -- and we can check the
22 record, because I can't see it -- on the previous

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1 question, you used a different term as opposed to in
2 this question you said "Would they know how to use a
3 multiplexer." And so I'm a little bit unsure of the
4 parallel nature between the two questions.
5 Q. Yeah. Let me -- in the previous question, I
6 used the term "implement." And here, I think I used the
7 phrase "know how to use." But let's just be -- let's
8 make sure that we're on the same page here.
9 When I say "how to use," I mean implement,
10 but do you view "how to use" and "implement" as two
11 different things?
12 A. I do.
13 Q. Okay. What difference do you see between the
14 term -- or phrase "how to use" and the word "implement"?
15 A. So I'll start with "implement." When you say
16 "implement," to me it means that you have to produce a
17 multiplexer. I believe that a -- and I believe that
18 that is what a person of ordinary skill -- an engineer
19 or a computer scientist would understand. If you want
20 me to implement, I must design, I must produce one.
21 As opposed to if you ask me to use one, me
22 being a person of ordinary skill in the art, that means

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1 you're going to give me one, and I'm going to operate
2 it.
3 Q. Okay. And let me go back, then, to
4 demultiplexer now that we've clarified that, which I
5 appreciate.
6 For a demultiplexer, do you have a view on
7 whether a person of skill in the art would know how to
8 use a demultiplexer with known decoding techniques?
9 MR. CARTER: Object to form.
10 A. I believe that a person of ordinary skill in
11 the art, as we have described them, in 2002 would, if
12 given a particular multi- -- or excuse me. We're
13 talking about demultiplexer -- if given a particular
14 demultiplexer and given a particular coding standard or
15 method would know how to use that demultiplexer. Yes.
16 Q. Okay. Thank you.
17 And now with our understanding of "how to
18 use," I'd like to ask that question for multiplexer.
19 Would a person of skill in the art know how
20 to use a multiplexer if given an encoding technique?
21 MR. CARTER: Object to form.
22 A. I have to answer that no.

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1 Q. Why is your answer no, that a person of skill
2 in the art would not know how to use a multiplexer if
3 given an encoding technique?
4 A. My answer is no because the ability to use
5 would depend on whether the particular demultiplexer --
6 I'm sorry. I did it again. Strike -- whether the
7 particular multiplexer was a multiplexer implemented for
8 said coding method.
9 Q. That's a fair point. So let me ask the
10 question more precisely, then.
11 Would a person of ordinary skill in the art
12 know how to use a multiplexer to implement a known
13 encoding technique with which that multiplexer was
14 compatible or designed?
15 MR. CARTER: Object to form.
16 A. I think I understand you to be asking me if
17 you gave me an MPEG-1 multiplexer and said could a
18 person of ordinary skill use it to practice MPEG-1, I
19 think the answer is yes.
20 Q. Yeah. And maybe that's the easiest way to
21 proceed.
22 Professor, are you aware of H.263?

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1 A. I am.
2 Q. And are you aware that the early versions of
3 H.263 were publicly known/published before the year
4 2000?
5 A. Yes.
6 Q. Would a person of ordinary skill in the art
7 seeking to create an H.263 decoder know how to use a
8 demultiplexer to do that?
9 A. I think the answer to that question depends
10 on the nature of the said demultiplexer.
11 Q. Well, let me maybe ask the question even more
12 broadly.
13 Would a person of ordinary skill in the art
14 seeking to create an H.263 decoder know how to use any
15 demultiplexer to do that?
16 A. Forgive me, but I don't know if by "any" you
17 mean pick one out of the bag or exactly what "any"
18 means.
19 Q. Yeah. Let me, maybe, clarify that. I get
20 it. I could mean all of them, or I could just mean it's
21 possible to do it with one. So let me reask the
22 question.

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1 Would a person of ordinary skill in the art
2 seeking to create an H.263 decoder find it possible to
3 use a demultiplexer, whichever one they choose, to do
4 that?
5 MR. CARTER: Object to form.
6 A. With this clarification, I have to answer no.
7 Q. Why is your answer no to that question?
8 A. Because the multiplexer they selected could
9 be one that's incapable of processing the syntax
10 elements of H.263.
11 Q. And when a person of ordinary skill in the
12 art is looking at H.263, do you think that they would be
13 able to achieve a working H.263-compliant decoder by
14 selecting a correct demultiplexer?
15 A. If "correct" means an H.263 demultiplexer,
16 then the answer would be yes.
17 Q. Okay. And my question -- just so I make sure
18 we're on the same page. I'm trying to figure out what a
19 person of skill in the art is capable of. And so as I
20 understood your answer -- and please correct me if I
21 have it wrong -- in your view, a person of skill in the
22 art who wanted to create an H.263-compliant decoder

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1 would be able to do so by using an H.263 demultiplexer.
2 A. Yes.
3 Q. Now I'm going to ask the same question but
4 for multiplexers.
5 Would a person of ordinary skill in the art
6 who wanted to create an encoder that produces an
7 H.263-compliant bitstream be able to do so by selecting
8 a multiplexer that is capable of producing an
9 H.263-compliant bitstream?
10 A. I have to again answer no.
11 Q. Why is your answer no to that question?
12 A. Because there are many different possible
13 designs for that demultiplexer, and H.263 -- also,
14 compliancy can be at a certain level and not necessarily
15 the whole standard. So I think that, again, the
16 multiplexer has to be matched to the encoder.
17 Q. Okay. So if given an existing encoder that
18 produces an H.263-compliant bitstream and with the
19 knowledge of a matching multiplexer that's part of that
20 existing encoder, do you believe a person would be able
21 to use the encoder and multiplexer together?
22 A. They should be able to do that.

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1 Q. The reason I'm asking -- and you may have a
2 clarification here. As you know, some of the claims
3 we've looked at so far in the '808 patent, they have
4 these limitations like demultiplexer and multiplexer.
5 And so what I'm trying to explore is what is the person
6 of ordinary skill in the art's ability to create an
7 apparatus that would have those components.
8 So just -- that wasn't a question. You may
9 not have a comment, but I want to clarify why I'm asking
10 these questions.
11 A. I understand.
12 Q. If you go back a page on Exhibit 2, the
13 '808 patent, at Column 26, around line 55, there is the
14 term "coding controller." Do you see that?
15 A. I see it.
16 Q. Do you have a view on whether a person of
17 ordinary skill in the art would know what a coding
18 controller is?
19 MR. CARTER: Object to form.
20 A. I think that "coding controller" is a fairly
21 specialized term that is not -- rephrase -- was not at
22 the 2002 time frame widely used with an agreed upon

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1 understanding of what it was in the art.
2 Q. So a person of skill in the art in the 2002
3 time frame, who we imagine read the '808 patent, do you
4 think they would have an understanding of what a coding
5 controller refers to there?
6 A. To the extent that this clause of Claim 10
7 gives a meaning to it, yes.
8 Q. Professor, in your answer, you said, "To the
9 extent that this clause of Claim 10 gives a meaning to
10 it, yes."
11 And just to clarify for the record, by "this
12 clause of Claim 10," you're referring to "a coding
13 controller for assigning a skip coding mode to a first
14 segment"?
15 A. Thank you. Yes.
16 Q. In the context of the phrase "a coding
17 controller for assigning a skip coding mode to a first
18 segment," do you have a view on whether a person of
19 ordinary skill in the art would know what the term
20 "coding controller" referred to?
21 A. I'm sorry. Could you repeat?
22 Q. Sure.

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1 In the context of the claim phrase "a coding
2 controller for assigning a skip coding mode to a first
3 segment," do you have a view on whether a person of
4 ordinary skill in the art reading that phrase would know
5 what the term "coding controller" refers to?
6 A. And I'll ask for a clarification. You've
7 said "reading that phrase," and I'm assuming that you
8 mean that they have not read the spec nor the other
9 claims.
10 Q. Let's start with that.
11 So assuming a person of ordinary skill in the
12 art sees the phrase "a coding controller for assigning a
13 skip coding mode to a first segment" and they don't see
14 any other context, do you think a person of ordinary
15 skill in the art would know what a coding controller is
16 there?
17 A. They would only know that it is for assigning
18 a skip coding mode to a first segment.
19 Q. So going back to a hypothetical, in a sense,
20 our person of skill in the art sees the phrase "a coding
21 controller for assigning a skip coding mode to a first
22 segment." You've testified that they would know that it

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1 is for assigning a skip coding mode to a first segment,
2 but do they have an understanding of what it -- that is,
3 the coding controller -- is?
4 A. I think that they would not other than that
5 it assigns -- it is something that assigns.
6 Q. Now I'd like to ask you a similar question
7 but in the context of a person of skill in the art who
8 has read the specification, some of the embodiments
9 described in there, and then sees the phrase "a coding
10 controller for assigning a skip coding mode to a first
11 segment."
12 Do you have a view on whether that person of
13 skill in the art would have an understanding of what a
14 coding controller refers to?
15 A. Well, let me state first that the term
16 appears in many places in the patent, and I think it may
17 appear in some figures. And my answer -- before
18 answering, I would like to look at those figures. And
19 if you'd direct me, because I imagine you know where
20 they are, that would be helpful to me.
21 Q. Why don't we do this. Why don't we take a
22 brief break, and we can get that electronic exhibit so

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1 we can pull up the '808 patent on a computer. And then
2 you can search and control-F to identify particular
3 words or whatever you need, and then we can revisit this
4 question. Does that sound okay?
5 A. Sounds great. Thank you.
6 (Off the record 9:42 a.m. to 9:53 a.m.)
7 THE REPORTER: Back on the record.
8 Q. Professor, welcome back.
9 A. Thank you.
10 Q. And, Professor, just so the record is clear,
11 now you have in front of you a computer. That computer
12 has electronic copies of the exhibits. Do you see the
13 computer?
14 A. I do see it.
15 Q. And, Professor, you should have complete
16 control of the computer, and I invite you, if useful, to
17 control-F and look at the exhibits. Although, I ask
18 that if you are reading from the exhibit or performing a
19 search function or something like that, can you please
20 state you're doing so for the record?
21 A. I will endeavor to do so.
22 Q. Thank you.

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1 And we were just talking about the term
2 "coding controller." And so if you would, please -- you
3 mentioned there were some figures that may clarify your
4 understanding. So feel free to search for the term or
5 whatever you need, but if you could let me know which
6 figures you had in mind, I would appreciate it.
7 A. Yes.
8 And since we just came back, was there a
9 question pending when we took the break?
10 Q. I think the question was "Does that sound
11 okay?" and it was in reference to providing you with
12 electronic exhibits. So I don't think there was a
13 substantive question pending.
14 A. Then my understanding and recollection is
15 that we were discussing a particular term that appeared
16 in one of the claims.
17 Q. That's right. And, Professor, if it's okay,
18 I would like to just revert back to the topic we were
19 discussing before and then go back to this "coding
20 controller" term.
21 One thing that struck me during our prior
22 exchange is your answers differed slightly with respect

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1 to the term "multiplexer" in an encoding claim than with
2 respect to the term "demultiplexer" in a decoding claim.
3 And my question is this: Do you believe that
4 the video coding standards specify the encoding process?
5 MR. CARTER: Object to form.
6 A. Could you be specific as to a video coding
7 standard?
8 Q. Sure.
9 We were just speaking about H.263. Do you
10 think that the H.263 standard specifies an encoding
11 process?
12 A. I'll have to ask for one more clarification.
13 Could you tell me what you mean by "specifies"?
14 Q. Yes.
15 And you know what? I might be able to make
16 this a bit easier. I'll mark as Exhibit 3 -- this is
17 actually the H.264 standard, so it's not the same. But
18 I'll mark this as an exhibit, Exhibit 3.
19 A. Okay.
20 (Exhibit Number 3 marked.)
21 MR. CARTER: And just to clarify, this is not
22 an exhibit in the IPRs, right?

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1 MR. VERBONCOEUR: Correct, as of now.
2 MR. CARTER: Okay.
3 Q. Professor, do you recognize what's been
4 marked as Exhibit 3?
5 A. Mine don't have numbers on them, but I
6 believe you're referring to H.264.
7 Q. Correct. There's a document that was just
8 handed to you, and in the upper right-hand corner of the
9 document it says "H.264." Do you see that?
10 A. I do.
11 I would like to ask counsel if he minds if I
12 write the number on here.
13 MR. CARTER: Well, do we have stickers?
14 (Discussion off the record.)
15 Q. Professor, now that you have the marked
16 copies, I'd like to ask you about the document that's
17 been marked as Exhibit 3. Do you have that in front of
18 you?
19 A. I do.
20 Q. Do you recognize the document marked as
21 Exhibit 3?
22 A. I do.

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1 Q. What is Exhibit 3?
2 A. Exhibit 3 is the March 2005 version of the
3 H.264 standard.
4 Q. Do you agree that the H.264 standard was
5 originally published in 2003?
6 MR. CARTER: I'll object as outside the scope
7 of his declaration.
8 A. I don't have that memorized.
9 Q. The '808 patent refers to a group called the
10 Joint Video Team. Do you have an understanding of what
11 the Joint Video Team is?
12 A. I do.
13 Q. What is the Joint Video Team?
14 A. The Joint Video Team is a standardization
15 body that was established through a collaboration
16 between the ITU-T, what's called VCEG -- that's
17 V-C-E-G -- and a different ISO group called MPEG.
18 Q. In the '808 patent, when it's talking about
19 the activities of the JVT, it refers to something called
20 JM1. Do you know what JM1 refers to?
21 A. I do.
22 Q. What is JM1?

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1 A. JM1 refers to something called Joint Model 1,
2 and it was a draft of a video coding standard that
3 itself was not standardized, ever.
4 Q. Do you understand that the Joint Video Team's
5 efforts on JM1 led to the H.264 standard?
6 MR. CARTER: Object as outside the scope.
7 A. My understanding is that the document that
8 we're referring to as JM1 was a working draft of
9 something that was called H.26L that, through many
10 meetings and revisions, gave birth to or from which
11 emerged this document that you have put before me as
12 Exhibit 3.
13 Q. And by "Exhibit 3," you're referring to
14 what's labeled "H.264" in the upper right corner.
15 A. Yes.
16 Q. If you look back at what's been marked as
17 Exhibit 2 -- and that's the '808 patent -- the top right
18 corner of the first page, there is a column header
19 called "Other Publications." Do you see that?
20 A. I do.
21 Q. And there are, it looks like, four distinct
22 documents listed. The first document listed, you see it

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1 says "Video Coding Experts Group, VCEG." Do you see
2 that?
3 A. Yes. I believe you're referring to the
4 instance that says "Meeting: Pattaya, Thailand" right
5 afterwards.
6 Q. Right.
7 Earlier in your answer when you were
8 describing what the Joint Video Team was, you made a
9 reference to VCEG. Is this the VCEG you were talking
10 about, the Video Coding Experts Group?
11 A. Yes.
12 Q. In the first document in "Other
13 Publications," titled "Global Motion Vector Coding,
14 GMVC," there is a date that says "December 4 through 7,
15 2001." Do you see that?
16 A. I do.
17 Q. Then if you look at the second document on
18 the cover page of the '808 patent, it says "Joint
19 Model 1, JM-1, Doc. JVT-A003." Do you see that?
20 A. Yes.
21 Q. Do you understand the document title
22 "JVT-A003" to refer to the A meeting of the Joint Video

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1 Team? So that would be the first meeting.
2 A. I can't recall. I would look at their site.
3 And, you know, I would probably agree, but I can't -- I
4 don't want to commit to that without looking.
5 Q. Okay. Thank you.
6 There is a definition in the H.264 standard
7 that we talked about as sort of along the evolution of
8 JM1, but I'd like to ask you about this definition.
9 If you go to -- it's page 6 of the document.
10 The document begins with a table of contents, but it's
11 the first page 6.
12 A. You're referring to the page that is numbered
13 as 6.
14 Q. Correct.
15 A. I'm there.
16 Q. In Exhibit 3, there is a Definition 3.47, and
17 that's the definition for "encoding process." Do you
18 see that?
19 A. I do.
20 Q. And I'd like to ask you about a person of
21 skill in the art in the 2002 time frame and the scope of
22 the video coding standards with reference to this

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1 definition.
2 The definition says "A process, not specified
3 in this recommendation|international standard, that
4 produces a bitstream conforming to this
5 recommendation|international standard." Do you see
6 that?
7 A. I do.
8 Q. Earlier when we were talking about the
9 encoding claims with the term "multiplexer," you -- and
10 let me know if I have this wrong -- but you made a
11 comment that they may not be able to use a multiplexer
12 depending on the specifics of the encoding algorithm.
13 Do you recall that exchange?
14 A. I do.
15 Q. Firstly, do you think that a person of skill
16 in the art in 2002 would understand that an encoding
17 process is not specified in the ITU video coding
18 standards?
19 MR. CARTER: I'll object to form and also
20 outside the scope of his declaration.
21 A. Well, there's a nuance to the word "specify."
22 Some information that is disclosed in H.264 and H.26L is

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1 what's called normative. That means it's part of the
2 standard and it is standardized. There is other
3 disclosures -- forgive me. There are other disclosures
4 which are what is known as non-normative. They are
5 disclosed but not standardized. And that is, in my
6 opinion, very relevant to the question of whether an
7 encoder is specified. So I would like to be very clear
8 about what the word "specify" means.
9 Q. Okay.
10 A. I'm sorry. I'll keep going for one more
11 brief statement, which is that in the definition you
12 have pointed me to on page 6, which is Definition 3.47
13 of "encoding process," it says "A process not
14 specified." And I read that, based on my experience
15 with this document, to mean not specified normatively.
16 Q. What is your understanding of the phrase
17 "normatively" in your answer?
18 A. It is part of the standard.
19 Q. So what you're saying is that it's a process
20 not specified in the recommendation that is not part of
21 the standard.
22 A. Yes. For example, it is not uncommon for

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1 these standards to provide what's called a reference
2 encoder. It's not part of -- it is not a normative part
3 of the standard, but it's specified.
4 Q. I see.
5 And I'd like to revisit our 2002 person of
6 skill in the art and explore what -- I'm trying to tell
7 you what I'm trying to ask about.
8 Does that person of ordinary skill in the art
9 trying to build an encoding apparatus have additional
10 hurdles to making that encoder in light of the fact that
11 they can't rely on the standard for a fully normative
12 encoder?
13 MR. CARTER: Object to form and outside the
14 scope.
15 A. Given the questions that we've discussed so
16 far, I'm unclear -- and you may have said it and I just
17 didn't get it -- but I'm unclear in the currently
18 pending question if you're referring to this person of
19 ordinary skill in 2002 using a multiplexer that they've
20 been given or if they are going to design and implement
21 themselves.
22 Q. That's fair. That's fair. And so let me

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1 clarify that.
2 We had that exchange about demultiplexers,
3 and then your answer was slightly different for
4 multiplexers, which is why I'm trying to figure this
5 out.
6 If a person of skill in the art was given
7 something like an H.26- -- an encoder that produces an
8 H.263-compliant bitstream, would that person of ordinary
9 skill in the art understand that that encoder comes with
10 a multiplexer?
11 A. An H.264-compliant encoder needs to produce a
12 bitstream, and while the implementation details of an
13 encoder are left to the implementer by the standard, in
14 my opinion, it's fair to say that the widely understood
15 method of producing the bitstream is as the output of a
16 multiplexer.
17 Q. Okay. And so if a person had an existing set
18 of encoding techniques with an existing encoder that had
19 an existing multiplexer, would they be able to put those
20 things together and operate a working encoder to
21 produce, let's just say, an H.263-compliant bitstream?
22 MR. CARTER: Object to form.

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1 A. I'm sorry. Could you read the question back?
2 Q. If a person -- I may want to rephrase it
3 after I read it, but with that preface --
4 A. Fair enough.
5 Q. -- I will reread it to you.
6 If a person had an existing set of encoding
7 techniques with an existing encoder with an existing
8 multiplexer, would they be able to put those things
9 together and operate a working encoder to produce, let's
10 just say, an H.263-compliant bitstream?
11 MR. CARTER: Same objection.
12 A. Generally speaking, if they had an encoder --
13 a 263 -- I'll start again.
14 Generally speaking, if they had an
15 H.263-compliant encoder and they had an H.263-compliant
16 multiplexer, those two might or might not work together,
17 because the implementation details of the encoder are
18 left to the implementer.
19 On the other hand, if you're saying that it
20 is a particular encoder that has its particular
21 multiplexer, well, then they would have already been
22 together.

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1 Q. Thank you. That clarifies, I think, what
2 your answers were earlier.
3 Okay. Now I would like to go back to the
4 topic we were talking about before our break, and that
5 was this coding controller topic.
6 And, Professor, in front of you is the
7 computer with electronic versions of exhibits, and you
8 should be able to see what's been marked as Exhibit 2,
9 which is the '808 patent.
10 A. I do.
11 Q. And earlier I had asked what a person of
12 skill in the art's understanding of coding controller
13 was. Do you recall that?
14 A. I do.
15 Q. And now my question is: A person of ordinary
16 skill in the art who has had the opportunities to look
17 at an embodiment of the '808 patent, what is their
18 understanding of a coding controller?
19 A. I'm going to control-F in the '808 patent
20 electronic PDF version and look for the term "coding
21 controller."
22 I get zero.

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1 MR. CARTER: Are the exhibits OCRed on that
2 laptop?
3 MR. VERBONCOEUR: I don't know. It could
4 also be an orientation thing, because the exhibits are
5 typically not in the same orientation as the text.
6 A. I'll try "coding control."
7 And I'll spell it correctly this time.
8 Q. And, Professor, if it's helpful, if you, for
9 example, look at Figure 6, Figure 7, they include boxes
10 with the label "Coding Control." I don't know if that
11 helps navigate the patent.
12 A. Well, it does.
13 And so I will answer in a partial fashion by
14 saying that Figure 6 shows a Box 160 that is labeled
15 "Coding Control." And Figure 7 contains also a box
16 labeled "260" that says "Coding Control." And I don't
17 want to proceed from memory, but I recall that -- I
18 believe that the specification has some text in it which
19 refers to these two boxes.
20 Q. Okay. And also, I'll direct your attention
21 to Figure 1 of the '808 patent.
22 Let me know when you're there.

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1 A. I'm there.
2 Q. If you look at Figure 1, underneath the label
3 "Figure 1," it says in parentheses "Prior Art." Do you
4 see that?
5 A. I do.
6 Q. Is it your understanding that the '808 patent
7 is depicting here what's been known in the art to a
8 person of skill in the art?
9 A. Yes. It's my understanding that that
10 designation "Prior Art" on Figure 1 means that the
11 disclosures in this figure are acknowledged to be part
12 of the prior art, which is a term with a meaning, and
13 specifically here, it means that it would have been
14 known to an ordinarily skilled artisan.
15 Q. Do you have reason to dispute the label on
16 Figure 1 of "Prior Art" in the sense that do you have
17 any reason to dispute that a person of ordinary skill in
18 the art would know of the labeled components of
19 Figure 1?
20 A. I believe that -- let me rephrase.
21 It is my opinion that a person of ordinary
22 skill in the art would have been familiar with prior art

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1 encoders. Figure 1 is an encoder. And they would have
2 been familiar with the concept, and it would have been
3 well known that control was needed in such a device.
4 And they would have probably needed further
5 clarification to understand -- they would have needed
6 further clarification beyond just what's in the figure
7 here -- Figure 1, I'm referring to -- in order to know
8 exactly what the authors of the '808 patent mean,
9 you know, in this disclosure, which they are labeling as
10 "Prior Art" by their Box 160 that's labeled "Coding
11 Control." But they would have had a general
12 understanding that there are outputs and inputs shown,
13 and I believe, as I said, that there's discussion of
14 this box in the spec.
15 Q. And I'll turn to that in a moment.
16 But before I do, while we're on this page of
17 the '808 patent, there is a box labeled "170" in
18 Figure 1 that has the title "MUX/DEMUX." Do you see
19 that?
20 A. I do.
21 Q. Would a person of ordinary skill in the art
22 know what MUX/DEMUX refers to?

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1 A. Well, a person of ordinary skill in the art
2 looking at Figure 1, again, would have had a familiarity
3 with video encoders, and they would know that this
4 "MUX/DEMUX" box is going to assemble the bitstream.
5 Q. MUX, M-U-X, refers to a multiplexer?
6 A. Correct. That's understood.
7 Q. And a person of skill in the art would know
8 that DEMUX refers to a demultiplexer?
9 A. Yes.
10 Q. Okay. Now, Professor, I'd like to direct
11 your attention to Column 4 of the '808 patent.
12 A. I'm there.
13 Q. Okay. Thank you.
14 And feel free to read as much as you would
15 like, and feel free to use the electronic version of the
16 '808 patent.
17 But I'd like to direct your attention to the
18 second full sentence of Column 4 that says "Switches 102
19 and 114 are operated cooperatively by control manager
20 160 to switch the encoder between an intramode of video
21 encoding and an intermode of video encoding." Do you
22 see that?

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1 A. I do see that.
2 You invited me to read, and I'll represent to
3 you that I am going to use the electronic version --
4 since it's not OCRed -- to go to the figure, and then
5 I'll read this again while viewing the figure on the
6 computer.
7 Q. Okay. Thank you. And if we need to OCR it,
8 I assume there's no issue with doing so.
9 A. And I will ask if anyone knows how to rotate
10 the view in this PDF reader.
11 Oh, maybe that.
12 The court reporter has assisted me to rotate
13 it.
14 THE WITNESS: Yes, that's what we're after.
15 Thank you.
16 A. I'm reading Column 4 now.
17 I'll represent to you that I've read the
18 first paragraph, and I think that that's probably what I
19 need to read to answer your question, but I've forgotten
20 your question.
21 Q. No worries. Let me reask the question.
22 So my question is: A person of ordinary

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1 skill in the art who has had a chance to read through
2 the '808 patent and read an embodiment, read the
3 figures, would they have an understanding of what a
4 coding controller refers to in Claim 10?
5 A. They would have an understanding that, for
6 example, the passage that you directed to me in
7 Column 4, specifically the second sentence that begins
8 "Switches 102 and 114," tells the person of ordinary
9 skill one of the functions that's performed by the
10 Box 160 labeled "Coding Control" in Figure 1.
11 Q. We may be speaking past each other. I'm not
12 sure that answered my question. Let me reask my
13 question, and maybe it does. So let's figure this out.
14 A person of skill in the art who has had a
15 chance to read the '808 patent, would they know what a
16 coding controller refers to in Claim 10?
17 A. In Claim 10.
18 Q. Yes.
19 A. My answer is yes, because I think, as I
20 should have or did state before, that this term is not
21 one that has a well-understood definition in 2002 in the
22 art. But the spec of the '808 patent would inform a

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1 person of ordinary skill about tasks and functions that
2 are performed by the box in Figure 1 and what the
3 authors of the '808 patent mean when they use this term
4 in Claim 10.
5 Q. And focusing on the second part of the answer
6 you just gave, what the author of the '808 patent meant
7 when they used that term, what would a person of skill
8 in the art understand the author of the '808 patent's
9 meaning to be with respect to the "coding controller"
10 term?
11 A. It appears in many places in the patent. And
12 so I think to answer -- to give a complete and accurate
13 answer to that question, I would, you know, have to go
14 through the whole spec or control-F through.
15 But, for example, a person of ordinary skill
16 would understand that there are two switches in
17 Figure 1, Switch 102 and Switch -- they're actually
18 labeled "Switch Number 1" and "Switch Number 2," but
19 they're Boxes 102 and 114. And a person of ordinary
20 skill in the art would be familiar with the general
21 purpose of those switches and would understand that
22 control logic of some kind is needed in a video encoder,

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1 whether it be a software encoder or a hardware encoder
2 or whatever kind of encoder.
3 And the authors of the '808 patent, for
4 example, in Column 4 -- in the first paragraph that
5 appears in Column 4, are telling the person of ordinary
6 skill that one of the things that they mean to be
7 accomplished by the coding control box in Figure 1 is to
8 operate cooperatively those two switches.
9 I'm done.
10 Q. Okay. I didn't want to interrupt you.
11 A. Yeah. Thank you.
12 Q. And, Professor, you just referenced a person
13 of ordinary skill in the art's understanding of coding
14 control. In your answer, you referred to the operation
15 of two switches. And just for clarity of the record,
16 the switches you're referring to are the ones that are
17 described, as an example, in Column 4 that switch the
18 encoder from the intramode of video encoding to an
19 intermode of video encoding?
20 A. Yes.
21 Q. What is a person of ordinary skill in the
22 art's understanding of intramode of video encoding?

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1 A. In 2002, a prior art encoder such as the one
2 depicted in Figure 1 would be understood by an
3 ordinarily skilled artisan to most likely be processing
4 a video sequence -- a sequence of video frames received
5 in the figure on line 101 on a macroblock-by-macroblock
6 basis. That ordinarily skilled artisan would understand
7 "intramode" to mean that the current macroblock shall be
8 encoded without using prediction information from
9 another picture.
10 Q. What is a person of ordinary skill in the
11 art's understanding of intermode of video encoding?
12 A. Again, with respect to an ordinarily skilled
13 artisan in 2002, they would understand that a video
14 encoder such as the one in Figure 1 would most likely be
15 receiving the input video stream -- or excuse me --
16 would most likely be receiving the input video frames on
17 the line 101 in the figure and on a
18 macroblock-by-macroblock basis. The term "intercoding"
19 would mean that the currently -- the current macroblock
20 may be encoded using prediction information from a
21 different picture.
22 Q. I'd like to go back in Exhibit 2, the

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1 '808 patent, and ask about another claim term. And if
2 you look at Column 27, line 59, there is a claim term
3 "motion compensated prediction block."
4 Let me know when you're there, and I'd like
5 to ask you about that term.
6 A. I'm now on Column 27, and I believe you
7 directed me to line 59.
8 Q. Correct.
9 A. I am there at line 59.
10 Q. Okay. Thank you.
11 Do you have a view on whether a person of
12 ordinary skill in the art would understand what a motion
13 compensated prediction block is?
14 MR. CARTER: Object to form.
15 A. Yes.
16 Q. What is your view on what a person of
17 ordinary skill in the art in 2002 would understand a
18 motion compensated prediction block to be?
19 A. Such a person would understand a motion
20 compensated prediction block to be a block of pixels
21 that shall be used for predicting the values of a
22 current block that is being encoded where said motion

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1 compensated prediction block came from a different
2 picture, or even perhaps a plurality of different
3 pictures, and may have come from a spatial location
4 different from the spatial location of the currently --
5 of the current block that's being encoded in its current
6 picture.
7 Q. So we're looking here on Column 27 at
8 Claim 16. And if you look at -- are you familiar with
9 the term "preamble" of a claim?
10 A. I am.
11 Q. Okay. And if you would look at the preamble
12 of the claim.
13 Do you agree with me that Claim 16 is
14 claiming "A video decoder for decoding an encoded video
15 sequence, the decoder comprising," and then there are a
16 number of different components of that decoder?
17 A. I agree.
18 Q. And one component of that decoder in Claim 16
19 that we've already discussed is a demultiplexer.
20 A. Yes, I recall that.
21 Q. And now I'd like to ask you about this other
22 component called a motion compensated prediction block.

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1 Do you see that?
2 A. I do.
3 Q. And a person of ordinary skill in the art
4 reading Claim 16 -- I think we -- I think you testified
5 they would know what a motion compensated prediction
6 block does.
7 MR. CARTER: Object to form.
8 A. I may be splitting hairs, but I think that I
9 said they would know what it is.
10 Q. Fair enough. That is fair. Okay. Sorry,
11 Professor.
12 You testified -- I didn't mean to misstate --
13 that a person of ordinary skill in the art would know
14 what a motion compensated prediction block is.
15 A. Yes.
16 Q. And in the answer you gave earlier describing
17 the motion compensated prediction block, you referred to
18 a block of pixels being encoded. And so I just want to
19 ask you in the context of a decoder claim.
20 For an apparatus that's decoding blocks of
21 pixels, would a person of ordinary skill in the art know
22 what a motion compensated prediction block is?

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1 A. Thank you for your question. You're correct.
2 You're correct that I spoke in the context of an
3 encoder, whereas Claim 16 is applied to a decoder or
4 directed to a decoder.
5 In the decoder, the motion compensated
6 prediction block is, again, a block of pixels used for
7 predicting a block that is currently being decoded
8 wherein the motion compensated block comes from a
9 different picture, or perhaps a plurality of different
10 pictures, and may as well come from a spatial location
11 in the one or more reference pictures, they're called,
12 that's different than the position of the currently --
13 the block that is currently being decoded in its own
14 picture.
15 Q. Now I would like to switch to an encoding
16 claim, and this is Claim 10. And I'm looking at the
17 prior page, Column 26, of the '808 patent.
18 And if we look at the Claim 10 preamble, it
19 says "A video encoder for encoding a video sequence, the
20 encoder comprises," and then there are these various
21 components of the claim. Do you see Claim 10 and that
22 preamble?

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1 A. I do.
2 And if you would not mind, I would like to
3 take one -- a brief second to look into my declaration
4 table of contents just -- I want to make sure that I'm
5 clear that I testified -- or that I offered opinions on
6 Claim 10.
7 Q. Okay. Yes.
8 A. And I believe I did, but I just want to be
9 sure.
10 Q. Okay.
11 A. And I have verified that, and I thank you for
12 giving me the break on that.
13 Q. No worries.
14 Okay. So now looking back at Claim 10 -- and
15 now I'm looking at the components of the encoder. We
16 talked about coding controller. Now there's this term
17 "a motion estimation block." Do you see that?
18 A. I do.
19 Q. Do you have a view on whether a person of
20 ordinary skill in the art in 2002 would know what a
21 motion estimation block is?
22 A. I do.

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1 Q. What would a person of ordinary skill in the
2 art in 2002 understand a motion estimation block to be?
3 MR. CARTER: I'll object to form.
4 A. Here in Claim 10, they would understand that
5 the motion estimation block referred to here is an
6 element of encoder. And I realize that that differs
7 from the answer I just gave, and so I will footnote that
8 by saying I believe that my previous answer needs to be
9 modified probably.
10 But here in Claim 10 -- let me focus on that
11 for right now -- this motion estimation block is a block
12 that is included, or comprised by, the encoder. And a
13 person of ordinary skill would understand that this
14 block, at least, performs the function of assigning
15 either a zero motion vector or a predicted non-zero
16 motion vector for what's referred to here as the skip
17 coding mode for the first segment based at least in part
18 on the motion information of a second segment
19 neighboring the first segment.
20 And so I just read, obviously, what it says.
21 My point being that here in Claim 10 a motion estimation
22 block is not a block of pixels. It's an element

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1 comprised by a claimed video encoder that performs the
2 assigning that's referred to in Claim 10.
3 Q. Thank you for that clarification.
4 A. They would understand that.
5 Q. And we'll revisit Claim 16, and I'll reask
6 those questions. I heard your footnote, and we'll
7 revisit those.
8 A. Thank you.
9 Q. But I'd like to focus on motion estimation
10 first.
11 Would a person of ordinary skill in the art
12 in 2002 know what motion estimation is?
13 A. The term "motion estimation" was used in the
14 art and would have generally been understood by a person
15 of ordinary skill to mean binding information in a
16 reference picture that can be used or could be used to
17 predict a block that is currently being encoded. Here,
18 by "block," I do mean a block of pixels.
19 Q. Now we can go back to Claim 16. And before I
20 ask you about motion compensated prediction block, I'd
21 like to ask you about motion compensated prediction.
22 Are you familiar with that term, "motion compensated

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1 prediction"?
2 A. Yes.
3 Q. Have you seen the term "motion compensated
4 prediction" abbreviated as "MCP"?
5 A. I'm not sure I heard you correctly.
6 Q. Have you seen the term "motion compensated
7 prediction" abbreviated as "MCP"?
8 A. I don't know that I have.
9 Q. Okay. Would a person of skill in the art in
10 2002 know what motion compensated prediction is?
11 A. They would know that that term was used in
12 the art, the term being "motion compensated prediction,"
13 and that it has a generally understood meaning. Yes.
14 Q. What is the generally understood meaning of
15 "motion compensated prediction" that's known to the
16 person of skill in the art in 2002?
17 A. In the context of an encoder, it means using
18 a block -- by "block," I mean a block of pixels -- or a
19 segment, meaning a segment of pixels, obtained through
20 motion estimation to predict the values of a block or
21 segment of pixels that is currently being encoded.
22 And that is slightly differentiated from what

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1 it means in the context of a decoder. And in the
2 context of a decoder, the term "motion compensated
3 prediction" would be understood by a, as we call them,
4 POSITA to mean identifying a block -- excuse me -- using
5 a block from a previously decoded frame to serve as
6 predictions used for reconstructing the block that is
7 currently being decoded.
8 Q. Thank you.
9 Now I would like to go back to Claim 16 and
10 revisit our conversation about a motion compensated
11 prediction block. And I'll pick up where, I think, you
12 left off with your footnote.
13 But what would a person of ordinary skill in
14 the art understand a motion compensated prediction block
15 to be?
16 A. And I will answer by stating that the term in
17 isolation has a little bit of ambiguity to it, but I
18 think that, in isolation, a person of ordinary skill
19 would take it to mean a block that's going to be used as
20 a prediction of pixels.
21 But in reading this claim, Claim 16, it
22 clarifies it in a slightly different way, which says

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1 that the word "block" in the term "motion compensated
2 prediction block" -- that last part of it, "block" -- in
3 Claim 16 means an element comprised by a video decoder.
4 Q. Do you agree that, with the understanding of
5 "motion compensated prediction block" that you just gave
6 for Claim 16, a person of ordinary skill in the art
7 would know that a motion compensated prediction block
8 performs motion compensated prediction, as you described
9 it earlier?
10 A. They would -- I believe that -- I believe and
11 it is my opinion that a person of ordinary skill would
12 understand that generally such a block would perform
13 motion compensated prediction. And in reading Claim 16,
14 they would understand that to be specialized by the
15 author of the '808 patent to encompass the function or
16 act or task of assigning a motion vector as prescribed
17 in the lines that follow there, which are Column 27,
18 lines 58 through 64.
19 Q. Okay.
20 A. Which I'll not read.
21 Q. Thank you.
22 I'm about to introduce a new exhibit, but I

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1 think now is probably an appropriate time for a break.
2 So let's take five or ten minutes, whatever you need,
3 and then we'll come back.
4 A. Thank you very much.
5 Q. Sure.
6 (Off the record: 10:50 a.m. to 11:06 a.m.)
7 Q. Okay. Professor, welcome back.
8 A. Thank you.
9 Q. And as we just spoke about, the OCRing of the
10 exhibits for your computer with exhibits is nearly done,
11 but I'll just ask a few more questions about the patent
12 itself, and then we can start talking about the grounds
13 and the other exhibits.
14 A. Thank you.
15 Q. We left off talking about Claim 26 -- not 26.
16 I apologize -- Claim 16. And that's Column 27 of the
17 '808 patent. Let me know when you're there.
18 A. I am there.
19 Q. And you mentioned -- I believe in one of your
20 answers you referred to this assigning step. There's
21 "assigning either," and then it goes on at the bottom of
22 Column 27.

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1 A. I did.
2 Q. There is a term there, "skip coding mode" --
3 do you see that? -- in Claim 16.
4 A. I do.
5 Q. I'd like to ask you about coding mode, just
6 the term "coding mode."
7 Do you have a view on whether a person of
8 ordinary skill in the art would know what a coding mode
9 is in the context of video coding?
10 A. I do.
11 Q. What would a person of ordinary skill --
12 well, let me ask the question more precisely.
13 Do you think a person of ordinary skill in
14 the art would know what a coding mode is in the context
15 of video coding?
16 A. A person of ordinary skill would have a
17 general notion of what it means. It's a little bit of a
18 fuzzy term, but it had meanings in 2002 that were
19 understood.
20 Q. Would a person of ordinary skill in the art
21 know what a macroblock coding mode means?
22 A. A person of ordinary skill in the art in 2002

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1 would be aware that that term, "macroblock coding mode,"
2 was used in some standards, and they would have been
3 familiar with its use in those standards.
4 Q. What is a person of ordinary skill in the
5 art's understanding of "coding mode"?
6 Professor, if it helps, there is a table -- I
7 believe it is Table 3 -- in the '808 patent that has the
8 label "Macroblock Coding Modes of JM1."
9 A. That is, in fact, exactly what I was looking
10 for, so I appreciate that.
11 Q. And let me reask the question now.
12 What is a person of ordinary skill in the
13 art's understanding of "coding mode" in the context of
14 the '808 patent, which we're looking at?
15 A. Well, they would understand that the
16 '808 patent discloses in Table 3, for example, what were
17 called the macroblock coding modes of JM1. Which,
18 again, JM1 is an early draft of a standard that never
19 was a standard called H.26L.
20 And the person of ordinary skill would have
21 understood that in that draft standard macroblock coding
22 modes meant different ways or methods by which a

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1 macroblock could be -- indicate -- let me not use that
2 word -- could be encoded in the video bitstream. And
3 the coding modes of JM1 are enumerated there in Table 3,
4 and so a person of ordinary skill would understand that
5 term to mean those modes.
6 Q. Would a person of ordinary skill in the art
7 understand that a particular macroblock could be coded
8 with one of those modes listed in Table 3?
9 A. Yes.
10 Q. A person of skill in the art would understand
11 that a macroblock could not be coded with multiple of
12 those modes at the same time.
13 A. In JM1, those are the available coding modes,
14 and a macroblock is encoded using one of them.
15 Q. A person of skill in the art, looking at the
16 '808 patent, would understand it's not possible to code
17 a given macroblock with multiple coding modes at the
18 same time.
19 A. The encoder most likely encodes the
20 macroblock using all of those modes simultaneously, then
21 selects one, and in the encoded bitstream, places the
22 selected coding mode.

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1 Q. That's a fair clarification. The encoder is
2 going to go through some motion estimation process where
3 it undergoes a best mode selection, and then one and
4 only one of those modes will be selected for the given
5 macroblock.
6 A. As it is put into the encoded bitstream, yes.
7 Q. I'd like to direct your attention to two
8 excerpts from the '808 patent. And perhaps we can keep
9 them both in mind. The first is Column 14, line 23.
10 And this says "According to the invention, the skip mode
11 concept is redefined." Do you see that?
12 A. I do.
13 Q. And, Professor, you've read this excerpt from
14 the '808 patent before?
15 A. I have.
16 Q. In the second part, which is similar -- but
17 we can look at both at the same time -- is Column 17,
18 line 47.
19 And there, the patent says "More
20 specifically, the skip mode is modified in such a way."
21 Do you see that?
22 A. I do.

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1 Q. Do you agree that the inventor of the
2 '808 patent sought out to define his own version of the
3 skip mode?
4 MR. CARTER: Object to form.
5 A. I agree that the inventor of the '808 patent
6 purported to redefine the skip coding mode of JM1.
7 Q. If we look back at Table 3 in the
8 '808 patent, you and I just agreed that Table 3 listed
9 the macroblock coding modes of JM1 as they existed at
10 the time.
11 A. Yes. And I've lost it. If you could direct
12 me, I'd appreciate it.
13 Q. Column 12.
14 A. Oh, it's two-sided.
15 Q. Yes.
16 A. Sorry.
17 Okay. Yes, I'm back.
18 Q. Okay. And just for clarity, I think we
19 agreed that the Table 3 in the '808 patent lists the
20 macroblock coding modes of JM1 available at the time in
21 2002.
22 A. I'm not checking you on that, but I'll accept

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1 your representation, and that is what the patent says.
2 Yes.
3 Q. So at least according to the patent, these
4 would be the macroblock coding modes of JM1.
5 A. Correct.
6 Q. The first coding mode listed in Table 3 is
7 called, all capital letters, SKIP. Do you see that?
8 A. I do.
9 Q. And do you agree that the inventor's idea
10 here is that the coding mode that he's purporting to
11 redefine would be used in lieu of the mode labeled, all
12 capitals, "SKIP" in Table 3?
13 A. I'm sorry. Could you repeat the question?
14 Q. Yes.
15 Do you agree that the inventor's idea in the
16 '808 patent was that he purports to redefine something
17 called a skip coding mode and that the skip coding mode
18 that he's redefined would substitute the mode labeled
19 "skip" in Table 3?
20 A. I agree that he redefine -- he claims to
21 redefine the skip mode. And I'm not recalling off the
22 top of my head sitting right here right now if he

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1 precludes the use of what I'll call the traditional skip
2 mode, which is the one in Table 3.
3 Q. So I can direct you to Column 17 at line 43
4 of the '808 patent.
5 And that says "According to the invention,
6 the coding modes used by encoder 600 correspond to those
7 provided by JM1 of the JVT codec, parentheses, shown in
8 Table 3, closed parentheses, with the exception that the
9 skip mode is redefined to allow representation of global
10 and regional motion." Do you see that?
11 A. I do.
12 Q. And based on that disclosure of the
13 '808 patent, Column 17, lines 43 through 47, is it your
14 understanding that the inventor thought that the -- what
15 you call the conventional -- traditional skip would be
16 substituted out for what the inventor believed to be his
17 redefined skip mode?
18 A. Well, I just don't think he used those words.
19 I think the word he used is "modified."
20 Q. Okay. Well, let's look back at Table 3, but
21 let's use that word so that I can maybe ask a more
22 precise question. It's Column 12.

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1 A. I'm back at Column 12 again.
2 Q. The inventor said that the traditional skip,
3 the all capital SKIP, would be modified.
4 Is it your understanding that the inventor
5 was saying that what -- the syntax associated with skip
6 mode would remain the same but the mode itself would be
7 different somehow?
8 A. Well, it doesn't explicitly say that in
9 Column 17, for example, but it says that the skip mode
10 is redefined, and it says "More specifically, the skip
11 mode is modified."
12 Q. And what I'm trying to -- oh, I apologize.
13 A. Go ahead.
14 Q. What I'm trying to figure out is, is it your
15 view that the inventor thought of the resulting modified
16 JM1 as having two modes called skip? That is, the
17 inventor was providing an additional mode? Or the
18 inventor was saying "I'm going to modify the existing
19 mode of JM1 so that the coding modes in Table 3 are the
20 same coding modes, but the one that's called SKIP, with
21 all capital letters, is now a different mode"?
22 A. My understanding was the latter of what you

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1 just said.
2 Q. Thank you.
3 And I think now would probably be appropriate
4 just to double-check the OCRing. So let's take a quick
5 break and see if those electronic exhibits are available
6 to you.
7 A. Thank you. Understood.
8 (Off the record: 11:22 a.m. to 11:28 a.m.)
9 Q. Welcome back, Professor.
10 A. Thank you.
11 Q. I am going to mark another exhibit now. And
12 I understand that you also have an electronic version of
13 this exhibit.
14 MR. VERBONCOEUR: If I could please have this
15 marked as Exhibit 4.
16 (Exhibit Number 4 marked.)
17 Q. Oh, would you like to have a hard copy as
18 well?
19 A. Yeah, I think so. Then I can just use this
20 one for control-F'ing.
21 Q. Yeah.
22 Okay. Doctor, do you recognize what's been

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1 marked as Exhibit 4?
2 A. I do.
3 Q. If you look at the very first page of
4 Exhibit 4, there is a -- in the upper left-hand corner,
5 there's a column titled "Last Name" and then next to it
6 a column titled "First Name." And you see the name Per
7 Fröjdh. And I appreciate that I am not pronouncing it
8 the way that Mr. Fröjdh might pronounce that.
9 A. I see it. Yes.
10 Q. Do you recognize Exhibit 4 as the provisional
11 application that's referred to in your declaration, *
12 called Fröjdh?
13 A. I recognize it as being that. Yes.
14 Q. And I know that you're not a lawyer, but do
15 you generally understand that you've relied on a patent
16 application that you've called Fröjdh that has connected
17 to it a provisional application by the same inventors?
18 A. I do so understand.
19 Q. And do you understand that you've offered the
20 opinion in these cases that the subject matter in the
21 Fröjdh application that you rely on is also found in the
22 Fröjdh provisional application?

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1 A. Yes. It is my opinion that the elements of
2 what we call -- just because it's what I'm used to, I'll
3 say Fröjdh -- publication are supported in the Fröjdh
4 provisional application that you've marked as Exhibit 4.
5 Q. Okay. And because your opinion is that the
6 Fröjdh provisional application has the subject matter on
7 which you rely for the Fröjdh publication, is it okay
8 that I ask you questions about the Fröjdh provisional
9 application to get an understanding of what Fröjdh
10 discloses?
11 A. Yes.
12 Q. Feel free to look through the Fröjdh
13 document, but Fröjdh refers to something called a slice.
14 Do you have an understanding of what a slice is?
15 A. I do.
16 Q. What is a slice in the context of Fröjdh?
17 A. I'm going to use control-F in the electronic
18 version to make sure that I don't misspeak.
19 Q. Okay. Thank you.
20 A. A slice, as used in the Fröjdh provisional
21 application, is a segment of an image or a picture in a
22 video sequence that might encompass the whole picture,

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1 or it might not. Fröjdh refers to it as a bounded
2 segment on the page that is numbered 6 of 16.
3 And more generally, one would understand that
4 the slice is part of a hierarchy such that there is a
5 slice header.
6 Q. I don't want to interrupt you, but please let
7 me know when you've finished your answer.
8 A. And Fröjdh further articulates in the
9 penultimate paragraph above Section 4, which is also
10 found on page 6, the key idea that each slice should be
11 self-contained regarding global motion information.
12 And that's the end of my answer.
13 Q. Thank you.
14 I'd like to ask you about this concept of a
15 hierarchy that Fröjdh would recognize. Is it fair to
16 say that a person of skill in the art reading Fröjdh
17 would know that on that hierarchy you have frames,
18 slices, and image blocks, which are made of pixels, and
19 those blocks could be even subdivided further?
20 A. Yes. I would have used the word "picture"
21 where you said "frame," although they're often
22 understood to be synonyms. But usually it's said --

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1 it's called picture. And generally, yes, I agree.
2 There wouldn't necessarily be header information for all
3 subdivisions below a macroblock.
4 Q. So at --
5 A. But yes, generally.
6 Q. I apologize.
7 At a high level, there would be header
8 information for a picture; then lower than that, a
9 slice; and then lower than that, a macroblock.
10 A. Yes, I agree.
11 Q. I'd like to ask you about the concept of a
12 flag in video coding. Are you familiar with the
13 technical term "flag" in the context of video coding?
14 A. Yes.
15 Q. What is a flag in the context of video
16 coding?
17 A. Let me answer by saying that a person of
18 ordinary skill in 2002 would understand a flag as a
19 concept that has a generally understood meaning,
20 although there's some fuzziness to it.
21 But a flag could be, for example, a bit that
22 signifies some property. For example, there may be a

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1 bit that indicates that breaks in the numbering of the
2 frames are allowed or not allowed, and that would be
3 referred to as a flag.
4 And I'll stop with that.
5 Q. Okay. Is it fair to say that a flag is
6 dichotomous, to use a large word, but it could either be
7 on, or it could be off?
8 MR. CARTER: Object to form.
9 A. Certainly it's understood that there are
10 flags that work that way, as you articulated, on or off.
11 Without consulting a bunch of references, I don't feel
12 comfortable, you know, saying definitively that, yes,
13 that is the only way that the term "flag" is ever used,
14 but certainly it is used that way.
15 Q. For the concept of a flag bit, would you
16 agree that a bit has one of two possible values
17 necessarily? It could be a zero, or it could be a one.
18 A. That is what a person of ordinary skill
19 understands a bit to be.
20 Q. And I'd like to ask you about this concept of
21 GMC in Fröjdh. Do you understand GMC to refer to global
22 motion compensation?

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1 A. I'm using the electronic version to search
2 for that term within the document to make sure that I
3 answer accurately.
4 Q. Thank you for clarifying.
5 A. I agree with you that in the Fröjdh
6 provisional the acronym "GMC" stands for global motion
7 compensation.
8 Q. Do you agree with me that in Fröjdh -- which
9 my question now applies to both the provisional and the
10 publication, which you've said had the same subject
11 matter -- that the term "GMC" refers to global motion
12 compensation?
13 A. I would like to check it, because for some
14 reason, I may be recalling that I thought it was global
15 motion coding. And they're very close, and you may be
16 correct, but I would like to just check it to make sure.
17 Q. Okay. We can introduce that one later.
18 But just for expediency, putting aside the
19 meaning of the acronym, it's your opinion that the
20 subject matter of the Fröjdh publication you're relying
21 on has -- is the same as the subject matter that's
22 disclosed in the Fröjdh provisional.

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1 A. What I would like to say is that my opinion
2 is that the elements of the publication which I relied
3 upon in forming my opinions I found to be disclosed as
4 well in the provisional application.
5 Q. And it's not your opinion that there's some
6 part of the Fröjdh publication that only came later in
7 time that you're relying on to inform your opinions on
8 the Fröjdh ground that wouldn't be found in the Fröjdh
9 provisional.
10 A. That's correct.
11 Q. We can look and check the acronym later, but
12 I'm going to -- the acronym is probably not super
13 material as far as how it's specifically defined.
14 But what I'd like to ask you about now is how
15 GMC is signaled in Fröjdh. Do you have an understanding
16 of how GMC is signaled in Fröjdh?
17 A. From the top of my head, I can say that GMC
18 is taught by Fröjdh to be disclosed -- to be signaled in
19 the slice header.
20 Q. Do you know if Fröjdh teaches signaling GMC
21 in the slice header as a single bit?
22 A. I'll have to check.

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1 Q. Can you check on that in the provisional
2 application and let me know if you find a disclosure
3 that explains that.
4 A. And I'm going to have to ask the court
5 reporter to help me for a second, because I did
6 something on the pad that made my reader disappear.
7 THE WITNESS: Thank you.
8 A. So I'll give at least a partial answer at
9 this time.
10 I believe that you asked me if I could point
11 in Fröjdh provisional where the -- where it's disclosed
12 in detail whether it's a bit, for example, how the GMC
13 is signaled. And I had said previously that it was
14 signaled in the slice header.
15 And I'm looking currently on the page that is
16 marked 11 of 16 in the first part of Section 6, labeled
17 "Solution." And here is what I was thinking of, that
18 Fröjdh teaches a number of ways -- or examples are
19 provided of signaling GMC at the slice level. And I'm
20 not sure if that's what you had in mind.
21 Q. Okay. So looking at page 11 of 16 of
22 Exhibit 4, there is a sentence "The following is a list

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1 of implementation examples on how global motion
2 compensation, GMC, can be signaled." That's what you
3 were referring to.
4 A. That is what I was referring to. Yes.
5 Q. And Example 1 is whether GMC is on or not, is
6 signaled for each slice, along with any global motion
7 information, and there's that parenthetical "vectors."
8 A. I see that. Yes.
9 Q. And then Example -- it actually calls it
10 Example 1, but there's the number "2" next to it "where
11 all slices repeat the same GMC information." Do you see
12 that?
13 A. I do.
14 Q. And in Example 1, which has the "2" next to
15 it, do you understand that to mean that all of the
16 slices in a given sequence, at least the ones in that
17 example, will have GMC on or off but it will be the
18 same?
19 A. My understanding, yes, of the List Item
20 Number 2, labeled "Example 1," is that this is a
21 signaling method where GMC is signaled to be on in a
22 plurality of slices and that these slices all

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1 maintain -- the word that's used in the provisional
2 application is "repeat" -- the GMC information.
3 So that to me means -- and I think to a
4 person of ordinary skill reading this -- means that the
5 same global motion vectors are going to be used in every
6 slice, but they're going to be explicitly signaled in
7 every slice.
8 Q. And something strikes me, Doctor, that might
9 clarify our Example 1, next to the bullet point 2 or the
10 List Item 2. One way of interpreting page 11 of 16 on
11 Exhibit 4 is that Example 1 is actually the -- what's
12 marked as "1" in the list, "Whether or not GMC should be
13 used is signaled for each slice together with global
14 motion information constitutes vectors" --
15 THE REPORTER: Can you read a little slower.
16 MR. VERBONCOEUR: Yes.
17 Q. Example 1 is what's marked "1." And then
18 what we see as List Items 2 and 3 actually are
19 variations of what's been marked "1." So GMC, whether
20 it's on or off is signaled for each slice. But for
21 Example 2, the List Item 2, it's the same as Example 1,
22 but here, all the slices are repeating the same GMC

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1 information, which is going to be the indication of
2 whether GMC is on or off -- they call it GMC usage --
3 and global motion vectors.
4 Do you have that same reading?
5 A. That is precisely the way that I read this
6 and precisely the way that I -- it is my opinion a
7 person of ordinary skill would have read it. Yes.
8 Q. Okay. Thank you.
9 And can we agree that for each of the four
10 examples on how GMC can be signaled, whether or not GMC
11 is used is signaled for each slice? And then there are
12 variations on whether those slices have the same GMC
13 information or not. And then in Example 4, there's also
14 GMC information repeated at the picture header.
15 A. Yes. That's exactly what it says.
16 Q. Now I'd like to ask you about some of the
17 coding modes that are described in Fröjdh. I'll direct
18 you to a page in case that will help.
19 There's reference to something called copy
20 mode. And I think the first mention of that is on
21 page 9 of 16, but feel free to peruse the document.
22 A. And I'm going to control-F for it. I was

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1 looking to verify if it was all caps, and it is.
2 I'm at page 9 of 16.
3 Q. Okay. Thank you.
4 And on page 9 of 16 of Exhibit 4, there is a
5 sentence in the Fröjdh provisional that says
6 "Furthermore, there is one" -- all capital letters --
7 "COPY mode, which uses no MV and no coefficients." Do
8 you see that?
9 A. I do.
10 Q. Is it your understanding that the copy mode
11 described at Fröjdh is referring to a conventional copy
12 mode where a macroblock assigned to copy mode won't
13 exhibit any motion with respect to a reference frame and
14 will also have no coefficients, that is, no prediction
15 error or residual information?
16 A. No.
17 Q. Okay. Let me ask this question, then. What
18 is your understanding of the copy mode described here in
19 Fröjdh?
20 A. Well, my understanding and what I believe
21 would be the understanding of a person of ordinary skill
22 is almost exactly what you said. And forgive me being

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1 precise. But the macroblock itself, I don't know what
2 it has, but it would be encoded and decoded as having no
3 motion and having no coefficients.
4 Q. I see. Yes. So let me reask the question
5 with that clarification.
6 Is it your understanding that the copy mode
7 described in Fröjdh is referring to a conventional copy
8 mode where a macroblock is encoded and decoded as not
9 exhibiting any motion with respect to a reference frame
10 and not having any coefficients, that is, prediction
11 error or residual information?
12 A. It is. Yes.
13 Q. Now I would like to ask you about a different
14 mode in Fröjdh, and that mode is called -- let's see if
15 I can find it -- IGMC. And I believe the first mention
16 I see of that is on page 12 of 16 in Exhibit 4.
17 A. I am on page 12 of 16, and thanks to the
18 benefit of my control-F, I agree with you that that is
19 the first occurrence.
20 Q. Thank you.
21 And do you have an understanding of what
22 IGMC, or implicit global motion compensation, is in

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1 Fröjdh?
2 A. I do.
3 Q. What is your understanding of what implicit
4 global motion compensation, or IGMC, is in Fröjdh?
5 A. My understanding, which is, in my opinion,
6 consistent with what would be the understanding of a
7 person of ordinary skill, is that IGMC refers to a
8 method or technique -- I prefer the word "technique" for
9 this -- of performing global motion compensation wherein
10 the copy mode that we just discussed is reinterpreted
11 such that instead of the macroblock being associated
12 with a zero motion vector, it's associated with a motion
13 vector that may be predicted from neighboring blocks.
14 And implicit in that is at both encoder and decoder.
15 Q. And do you agree that IGMC in Fröjdh is used
16 when GMC is enabled?
17 A. Yes.
18 MR. VERBONCOEUR: I'm happy to take a quick
19 break -- I could use one -- and then we'll come back.
20 THE WITNESS: I was about to ask, so thank
21 you.
22 MR. VERBONCOEUR: Sure. You're welcome.

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1 (Off the record: 11:57 a.m. to 12:31 p.m.)
2 Q. Welcome back, Doctor.
3 A. Thank you very much.
4 Q. I'd like to return to what's been marked as
5 Exhibit 2, which is the '808 patent. I'd like to ask
6 you about Column 17, lines 43 through 53.
7 A. I'm there. Should I read them quickly?
8 Q. Sure. Feel free to read it to yourself.
9 Yes.
10 A. I've read it.
11 Q. Okay. Thank you.
12 And then you may also want to look at
13 Column 14, lines 23 through 32.
14 A. I've read those lines.
15 Q. Okay. Thank you.
16 And I'll refer to Column 17, but feel free to
17 look at Column 14 or anywhere else you need in the
18 patent.
19 I know you're not a lawyer, but are you
20 familiar in a general sense with this concept of
21 lexicography where an inventor can set out to define a
22 term in their own way?

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1 A. I am.
2 Q. Are you aware that in these cases both Amazon
3 and Nokia have taken the position that the language that
4 appears in Column 17, lines 47 through 52, I think it
5 is, form either all or most of the proper construction
6 for the term "skip coding mode"?
7 A. Well, I offered, actually, an opinion in my
8 declaration that I had seen the claim construction
9 briefs and that I was aware of the -- in that context
10 Respondent, Complainant, staff, and ALJ constructions of
11 the term "skip coding mode." And so I'm aware of those,
12 and I see that they have commonality with the lines that
13 you're referring to.
14 Q. And I think you're referring to the
15 International Trade Commission, or ITC, case -- is that
16 right? -- in your answer.
17 A. Correct. Those documents I'm referring to,
18 while I'm not -- while I was involved in that, I
19 submitted a claim construction brief early on, but then
20 I was not involved in those matters. And so I don't
21 have much knowledge of them, but in my list of exhibits,
22 I do have these claim construction briefs. I did review

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1 them.
2 Q. Uh-huh.
3 A. And I listed them in my declaration.
4 Q. Okay. Thank you.
5 And you'll agree that the language we looked
6 at from Column 17, lines 47 through 52, both parties at
7 the ITC and here in these cases use those words as a
8 starting point for construction, and then there was a
9 dispute between the parties as to whether the skip
10 coding mode needed to accommodate the possibility of
11 residual information.
12 A. Yeah. Do you mind if I just check that
13 against the declaration real quick?
14 Q. Sure. Yeah. Of course.
15 And for the record, can you say which
16 page from your declaration you're reading?
17 A. Absolutely.
18 I am on page 44, looking at a table which
19 occurs as part of paragraph 71.
20 Q. Thank you.
21 A. Yes. There's a portion of the language in
22 the lines you cited from Column 17 of the '808 that

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1 matches up word for word with the agreed upon elements
2 of the constructions from the various parties shown in
3 the table at paragraph 71 of the declaration.
4 Q. And at page 44 of your declaration, you have
5 Respondent, which means Amazon, their proposed
6 construction; Complainant, which means Nokia, its
7 proposed construction; and then the construction -- the
8 third construction listed for skip coding mode, which is
9 the one the ALJ actually adopted.
10 A. Correct.
11 Q. And the only difference between the
12 complainant and ALJ's construction and Amazon's is the
13 comma and residual information can be provided for each
14 skip mode macroblock.
15 A. That's correct.
16 Q. And then the rest of the language, starting
17 with "A coding mode in which," tracks the language from
18 Column 17, lines 47 to 52 -- and let me reask that
19 question to clarify.
20 Aside from the phrase "A coding mode in
21 which," the rest of the language in the construction the
22 ALJ adopted tracks the language at Column 17, lines 47

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1 to 52, of the '808 patent.
2 A. I see.
3 Right. "A coding mode in which" is part of
4 the construction that the ALJ adopted. Whereas those
5 words "A coding mode in which" don't appear in
6 Column 17, the rest of it is word for word.
7 Q. And as part of your declaration, you
8 supported Amazon's position on the claim construction,
9 but I don't think that either you or Amazon dispute that
10 the inventor was engaged in what we would call
11 lexicography or trying to define the term "skip coding
12 mode."
13 A. You know, I wasn't asked to analyze that
14 question, but I was aware that it was a disputed term.
15 Q. Okay.
16 A. And so whether or not there was any
17 determination as to -- by anyone or an opinion from
18 anyone that the authors of the patent had engaged in
19 lexicography, I can't recall anything about that. But I
20 know that the claim was disputed and construed.
21 Q. Okay. So I'd like to ask you about the
22 language in the construction. And this would be true of

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1 the way that the ITC construed the term, but also it's
2 the same language that Amazon has proposed too. And
3 that's the language at Column 17, lines 47 through 52.
4 And the phrase I'm interested in is
5 "depending on the characteristics of the motion in image
6 segments surrounding the macroblock in question." Do
7 you see that phrase?
8 A. I do see that phrase. Yes.
9 Q. I'd like to get your understanding of the
10 phrase "depending on the characteristics of the motion
11 in image segments surrounding the macroblock in
12 question." Is that okay?
13 A. Yes. Could you clarify, though, if you
14 mean -- I think you mean how I understood a person of
15 ordinary skill would read it.
16 Q. Yes. And that was my next question.
17 How would a person of ordinary skill in the
18 art understand the phrase "depending on the
19 characteristics of the motion in image segments
20 surrounding the macroblock in question"? In the context
21 of the '808 patent --
22 A. Uh-huh.

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1 Q. -- and assuming that this person of ordinary
2 skill in the art is from 2002.
3 A. So I believe I've stated in the declaration
4 that besides this one disputed term that we've just
5 discussed, "skip coding mode," that everything else is
6 plain and ordinary --
7 Q. Okay.
8 A. -- in the basis for my opinions.
9 And so plain and ordinary meaning to a person
10 of ordinary skill on "depending on the characteristics
11 of the motion in image segments surrounding the
12 macroblock in question," in my opinion, would mean -- a
13 person of ordinary skill would understand that to mean
14 the characteristics of image segments that surround.
15 And to surround would be to go around.
16 But in image and video coding, there is an
17 issue that encoders and decoders, as would be well
18 understood by a person of ordinary skill, almost always
19 process these segments -- or usually they're
20 macroblocks -- in what's called block RASP or scan
21 order, which raises a practical implementation issue
22 that you can't rely on blocks that haven't been

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1 processed yet, or haven't been received yet if you're in
2 decode.
3 And so that requires -- I believe and it's my
4 opinion that a person of ordinary skill would understand
5 this very clearly -- that the notion of surround would
6 have to depart a little bit from its otherwise ordinary
7 meaning to mean the surrounding blocks, that are what I
8 call causal, meaning that they've already been processed
9 so that they're available to be considered. And so that
10 is my opinion of what it means, and that is consistent
11 with -- I think it's Figure 9 of the patent, but I'll
12 check that right now.
13 Right. In Figure 9 where we see that there
14 are -- that surrounding seems to indicate six blocks
15 that go around that are surrounding, but omitted are the
16 ones that would not have been processed yet.
17 Q. Okay.
18 A. And I think that we can obtain an alternate
19 understanding of that that would have -- it's only
20 slightly different -- that would have been understood by
21 a person of ordinary skill. And I want to say -- it's
22 cited in the patent, I believe. It's Figure 9 of JM1, I

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1 think, that gives a slightly different notion where the
2 surrounding blocks are four of them.
3 And so I guess that a person of ordinary
4 skill in looking at all of this would say that the
5 phrase you have asked me about and I'm going on and on
6 about, "segments surrounding the macroblock in
7 question," would be the four that are indicated in JM1
8 or the six that are indicated in Figure 9.
9 Q. Looking back at that phrase, "depending on
10 the characteristics of the motion in image segments
11 surrounding the macroblock in question." If we have the
12 understanding of JM1 and we're looking at four above and
13 to the left blocks around the macroblock in question, do
14 you have an opinion on whether this -- the redefined
15 skip mode needs to depend on all four of those blocks
16 above and to the left of the current block? Or could it
17 be just some of those image segments?
18 A. Some might be, say, the north neighbor and
19 the west neighbor, for example.
20 And I note that the authors of the
21 '808 patent chose to use the term "surrounding" as
22 opposed to other choices that are often used in this --

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1 in the art, such as "neighboring" and "adjacent," for
2 example. But they chose to use "surrounding." So I
3 think given that, that, yes, it would need to be based
4 on the characteristics of the four at least, especially
5 given that the objective here ostensibly is to account
6 for global or regional motions. So yeah. I think you
7 would need to consider four.
8 Q. So four or more image segments surrounding
9 the macroblock in question need to be considered in
10 order to satisfy the construction of both parties of
11 skip coding mode, in your view.
12 A. That is my opinion. Yes.
13 Q. Okay. You mentioned JM1, and you mentioned a
14 figure from JM1. If I recall the figure you're
15 referring to, it has labels A, B, C, and D. Do you
16 agree with that?
17 A. I agree with that, within that figure -- as
18 we both have it in our heads -- E being the macroblock
19 in question.
20 Q. That's right.
21 And would you agree that in JM1, when a
22 median calculation was done, that three of those four

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1 motion vectors would be used to calculate the median?
2 So typically it would be A, B, C, but in the event that
3 one of A, B, or C was unavailable, then D would be used
4 as part of that median calculation.
5 A. I agree with you that the median is taken
6 of -- it is a median of three. And I don't, without
7 looking, remember the rules, but the rules for using the
8 four neighboring -- scratch "neighboring."
9 The rules for using the four surrounding
10 segments that are indicated in that figure to take a
11 median of three are articulated there in Section -- I
12 think it was 3.4.5.1 or something like that. Yes.
13 Q. So is it your view that JM1 is actually
14 considering four but only using three to derive the
15 actual median predicted motion vector?
16 A. I would like to look at JM1 to --
17 Q. Sure.
18 A. -- to answer that, just so I'm sure that I'm
19 accurate.
20 Q. Yeah. And there should be an electronic copy
21 of this too. But I'm going to mark as -- I think we're
22 up to Exhibit 5 now. This is the provisional

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1 application -- well, why don't we get the stamp on it so
2 that you can track the -- provisional application to the
3 '808 patent. And JM1 --
4 A. Okay.
5 Q. -- appears as an attachment. So you could
6 just go to the end, and then you can peruse JM1.
7 (Exhibit Number 5 marked.)
8 Q. I actually think that the figure you were
9 thinking about is probably Figure 10, and that is on
10 page 42 of 99.
11 A. Thank you.
12 You are correct, of course.
13 And I'm there on page 42, and I'll just look
14 at it real quick, since I asked for it --
15 Q. Sure.
16 A. -- to clarify.
17 Q. And for the record, the section of JM1 that
18 you were looking at is 3.4.5.1.1, called "Median
19 Prediction."
20 A. Yes, sir. That is correct.
21 Yes. The section that we're talking about,
22 which is Section 3.4.5.1.1 of JM1, states that the

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1 prediction is normally formed as the median of A, B, C.
2 And then there are rules that may deviate from that
3 based on the exact circumstances of the -- of this --
4 we'll call it segment, since that's what's in the
5 '808 -- E, which is in question.
6 Q. And my question to you is: When you're
7 looking at the phrase "depending on the motion
8 characteristics of image segments surrounding the
9 macroblock in question," do you see that as this is
10 what's used to form a prediction? Or do you see that as
11 a consideration step distinct from the actual
12 calculation of any prediction?
13 The reason I ask is we're looking here at
14 JM1, and there are four surrounding image segments, to
15 use your term, A, B, C, and D, but only three of them
16 are used in the actual motion vector prediction
17 calculation of the median.
18 A. I'm sorry --
19 MR. CARTER: Object to form.
20 Q. Should I reask the question?
21 A. Right. I failed to detect the question. I'm
22 sorry.

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1 Q. Yeah. Let me reask the question.
2 So we're looking at the phrase in the
3 '808 patent "depending on the characteristics of image
4 segments surrounding the macroblock in question." And
5 it seems that you might interpret that to mean these
6 image segments are the ones used to calculate a motion
7 vector, but you might also interpret that as these image
8 segments are considered in determining how to calculate
9 a motion vector. Do you have either of those
10 understandings of that claim phrase?
11 A. My understanding, which I believe is the same
12 as the understanding of a person of ordinary skill in
13 2002, is that those surrounding macroblocks or segments,
14 or whatever they are -- they're referred to as segments
15 in the '808 -- are considered. And insofar as the
16 median operation is concerned, it is a median of three,
17 which is normally formed as the median of A, B, and C,
18 as shown in Figure 10 of JM1.
19 But there are other alternatives, not only
20 involving which three, but involving whether or not it's
21 three, that are spelled out as a set of rules in JM1.
22 And JM1 also points out that it should be noted that

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1 these are still referred to as median prediction. So
2 when you say "median," it's normally the median of three
3 but not always the case.
4 Now, that is JM1. That is the median
5 prediction of JM1, which is cited in multiple places in
6 the '808 as well as its provisional.
7 I want to stop there, because I can't
8 remember if you asked me to refer that back to the claim
9 constructions.
10 Q. Before we get there, I think we can agree
11 that the median calculation done in JM1 that's described
12 in Clause 3.4.5.1.1 of JM1 will never take a median of
13 four motion vectors. It will always be three or fewer
14 motion vectors.
15 A. Well, I agree that it will never take a
16 median of four. That, in fact, was the subject of my
17 master's degree thesis, how to take a median when it's
18 an even number.
19 But yes. I just a second ago read the rules
20 in 3.4.5.1.1, and there are contingencies fewer than
21 three, but I do not see contingencies greater than
22 three.

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1 Q. And so now what I'd like to do is ask you
2 about whether you think that the median calculation in
3 JM1 would disclose the part of skip coding mode that is
4 "depending on the motion characteristics of image
5 segments surrounding the macroblock in question."
6 Do you have a view on whether the median
7 calculation at 3.4.5.1.1 of JM1 would disclose the
8 portion of the construction of skip coding mode that
9 says "depending on the motion characteristics of image
10 segments surrounding the macroblock in question"?
11 MR. CARTER: I'll object to form and outside
12 the scope of his declaration.
13 A. So I'm sorry. Could you just repeat the
14 question?
15 Q. Sure.
16 Does the median calculation in 3.4.5.1.1 of
17 JM1 disclose the part of the construction of skip coding
18 mode that is "depending on the motion characteristics of
19 image segments surrounding the macroblock in question"?
20 A. And by "the construction," you're referring
21 to Complainant's construction?
22 Q. This part of the construction is common,

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1 actually. So let me reask the question to make that
2 clear.
3 Does the median calculation in 3.4.5.1.1 of
4 JM1 disclose the part of all parties' construction of
5 skip coding mode that reads "depending on the
6 characteristics of the motion in image segments
7 surrounding the macroblock in question"?
8 MR. CARTER: Same objections.
9 A. Well, the reason that I'm taking a pause to
10 think about that is because in JM1, Section 3.4.5.1.1,
11 which we've referred to repeatedly, produces a
12 prediction. And that isn't exactly congruent with the
13 language that's in the construction wherein -- I'm going
14 to be talking like a patent here -- the "depending on
15 the characteristics of the motion in image segments
16 surrounding the macroblock in question" is construed to
17 associate but not necessarily to assign.
18 And so there's a little bit of a disconnect
19 there, and it's making me want to go back and make sure
20 that what I answer off the top of my head is consistent
21 with what I wrote nine months ago in the declaration.
22 Q. Okay. And the declaration is also OCRed, so

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1 if you need to consult it --
2 A. Oh, okay.
3 Q. -- then you can also do that.
4 You know, I've been asking this question in
5 the context of JM1, but I think we could also -- well,
6 let's do this.
7 In Fröjdh, there is this IGMC mode.
8 A. Yes.
9 Q. And IGMC mode, as I understand it, is when
10 GMC is enabled. Then the all capital "COPY mode" shall
11 be reinterpreted to do a median prediction from
12 neighboring blocks. Do you have that understanding as
13 well?
14 A. Yes.
15 Q. And is it your view that IGMC mode would meet
16 the part of the construction in all parties'
17 constructions of skip mode "depending on the
18 characteristics of the motion in image segments
19 surrounding the macroblock in question"?
20 A. Yes.
21 Q. Would the all capital "COPY mode" in Fröjdh
22 meet the part of the all parties' construction of skip

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1 coding mode that reads "depending on the characteristics
2 of the motion in image segments surrounding the
3 macroblock in question"?
4 A. I've opened the declaration in the PDF, and
5 I'm also looking at the hard copy.
6 Q. Sure. And just so the question is clear on
7 the record, what I'm asking about is whether -- if a
8 block is assigned Fröjdh's copy mode, would it meet the
9 part of the claim construction that says "depending on
10 the characteristics of the motion in image segments
11 surrounding the macroblock in question" according to
12 your interpretation of that phrase.
13 A. Thank you.
14 Yes. Yes.
15 Q. So a block in Fröjdh could be assigned either
16 copy or IGMC mode, and it would meet the part of the
17 claim construction of skip coding mode proposed by all
18 parties, "depending on the characteristics of the motion
19 in image segments surrounding the macroblock in
20 question."
21 A. That is my opinion, as articulated in the
22 declaration. Yes.

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1 Q. Okay. Thank you.
2 I'd like to ask you something about Fröjdh.
3 And this is on page 12 of 16. And I believe the Fröjdh
4 provisional is in front of you.
5 A. That was my question. You're referring to
6 the provisional.
7 Q. That's right.
8 And I think earlier we agreed that you're not
9 relying on the subject matter that isn't disclosed in
10 the provisional for purposes of your opinions that the
11 Fröjdh ground renders the '808 patent claims obvious.
12 A. Correct.
13 Q. Okay. So let's look at page 12 of 16 of
14 Fröjdh.
15 And, you know, correct me if I'm wrong, but I
16 think earlier you made the comment that the inventor of
17 the '808 patent chose to use the term "surrounding" in
18 Column 17 and that choice was relevant because you might
19 have used terms like "neighboring," for example.
20 A. Yes.
21 Q. I want to ask you about page 12 of 16 of the
22 Fröjdh provisional, because in the description of IGMC

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1 mode -- and earlier we agreed that the first mention of
2 IGMC was on page 12 of 16 -- it says "Just as for
3 inter MB modes, the motion vectors for this mode are
4 defined by the prediction from neighboring blocks." Do
5 you see that?
6 A. I do.
7 Q. Why would a person of skill in the art
8 understand the phrase "neighboring blocks" in Fröjdh to
9 refer to the surrounding part of the construction of
10 skip coding mode?
11 A. A person of ordinary skill would have
12 understood the term "surrounding" to be more restrictive
13 than the term "neighboring." So there are neighboring
14 blocks among the blocks or segments surrounding the
15 macroblock in question such that a person of ordinary
16 skill would understand "surrounding" to require a
17 plurality of neighboring or adjacent blocks or segments,
18 and more specifically, as we've established, in my
19 opinion, four or more.
20 Q. How would a person of ordinary skill in the
21 art in 2002, reading page 12 of the Fröjdh provisional,
22 know how many neighboring blocks Fröjdh is referring to

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1 in the context of the IGMC?
2 A. Based on the disclosure of Fröjdh in -- let
3 me say it better. It doesn't matter for the transcript,
4 but Fröjdh.
5 In the item or Example 15 that we're
6 referring to, Fröjdh's teaching is agnostic as to the
7 number of neighboring blocks, as they are called in
8 Fröjdh provisional, that would have to be used or be
9 required.
10 Q. You mentioned something about a master's
11 thesis in one of your answers earlier. Do you recall
12 that?
13 A. I do.
14 Q. And I believe you said that the subject
15 matter of your master's thesis involved figuring out how
16 one should do or could do median calculations involving
17 even numbers.
18 A. That is true.
19 Q. How would a person of skill in the art
20 understand they should do a median calculation of four?
21 A. To be absolutely technically precise, in the
22 fields of probability theory and statistics, this is

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1 referred to as a pseudomedian. And it is generally, but
2 not always, but almost universally understood to be the
3 arithmetic mean of the two central order statistics.
4 Q. Are you aware as of 2002 of any video coding
5 standard or video coding publication that relied on a
6 median of an even number such as four?
7 A. Sitting here today, without going to the
8 library or IEEE Xplore, I am not.
9 Q. Let's take a short break -- I think we're
10 quarter after the hour -- and then we'll come back, if
11 that's all right with you.
12 A. Thank you.
13 Q. Yes.
14 (Off the record: 1:16 p.m. to 1:35 p.m.)
15 Q. Welcome back, Professor.
16 A. Thank you.
17 Q. I'd like to go back to Exhibit 2, which is
18 the '808 patent, and I'd like to ask you about
19 Claim 40 -- I apologize -- yeah, Claim 40. That's
20 right.
21 That's in Column 30. Let me know when you're
22 there, please.

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1 A. I am in Column 30, and I can see Claim 40.
2 Q. Okay. Claim 40 refers to "A method according
3 to Claim 7" and then "further comprising." And then the
4 first word of the next step is the word "deriving." Do
5 you see that?
6 A. I do.
7 Q. And the phrase is "deriving the predicted
8 non-zero motion vector."
9 Do you have an understanding of what the term
10 "deriving" means here?
11 A. And I'm using control-F on the PDF version of
12 my declaration just, again, to try and ensure accuracy.
13 I'm looking for the term "deriving."
14 Q. Sure. Thank you for stating that.
15 A. Your question is do I have an understanding
16 of the meaning of the term "deriving" in this claim.
17 Q. Yes. In the context of the '808 patent, do
18 you have an understanding of the phrase "deriving the
19 predicted non-zero motion vector"?
20 A. I do.
21 Q. What is your understanding of the phrase
22 "deriving the predicted non-zero motion vector" in the

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1 '808 patent?
2 A. I think and it is my opinion that a person of
3 ordinary skill would understand it to mean calculating.
4 Q. I'd like to go back to Column 17 where we
5 spent some time earlier.
6 And in the part of the parties' claim
7 constructions for skip coding mode that are agreed
8 between the parties, it says that "a zero, parentheses,
9 non-active, closed parentheses, motion vector or a
10 non-zero, parentheses, active, closed parentheses,
11 motion vector is associated with each skip mode
12 macroblock."
13 Do you believe that there is a difference
14 between association of the zero, non-active, or
15 non-zero, active, motion vector and derivation or
16 calculation of a motion vector?
17 A. Yes.
18 Q. What is the difference between association of
19 a zero, non-active, motion vector or a non-zero, active,
20 motion vector and derivation or calculation of a motion
21 vector?
22 A. A person of ordinary skill would understand

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1 that there are, in fact, three related terms here that
2 are all slightly nuanced. They are associating,
3 assigning, and deriving. And at least one example of
4 where the nuance may have a practical significance is
5 that the '808, for example, may consider segments in a
6 region, may derive candidates, and may assign a motion
7 vector, and those are all slightly different in meaning.
8 Q. And maybe we could take those one at a time.
9 If we go back to Claim 40. And that's
10 Column 30, in case it's helpful.
11 A. I'm there.
12 Q. In Claim 40 is "a method according to
13 Claim 7," and I think you understand that Claim 7 is an
14 independent claim, whereas Claim 40 is a dependent
15 claim.
16 A. I further understand Claim 7 to be a decoder
17 claim.
18 Q. That's right.
19 And I know that you're not a lawyer, but you
20 generally understand the idea that you have independent
21 claims, and then dependent claims are variants that fall
22 within that scope of the independent claim.

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1 A. Yeah, I don't know exactly or -- you know, I
2 don't want to analyze "fall within the scope." But I
3 understand what it means to say that the dependent
4 claims depend from the independent claim, meaning that
5 they inherit the limitations of the independent claim.
6 Q. So we can agree that if one were able to
7 practice Claim 40, they need to be able to practice
8 Claim 7 in order to practice Claim 40.
9 A. I agree.
10 Q. And so what I'd like to ask you about is --
11 you mentioned derivation, association, and assigning.
12 And you may have used different tenses on those verbs,
13 but those generally are the three verbs at issue that
14 we're discussing.
15 A. Correct.
16 Q. And starting with deriving or derivation,
17 earlier you testified that that refers to a calculation
18 of a predicted non-zero motion vector.
19 A. And I don't want to go into, you know, trying
20 to construct "calculating," but perhaps "producing"
21 would be as good or better a word.
22 Q. Okay. And in Claim 40, it says "deriving the

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1 predicted non-zero motion vector based at least in part
2 on the motion vector of the second segment and the
3 motion vector of the third segment."
4 A. I see that.
5 Q. And so you understand that the derivation
6 step of Claim 40 can be accomplished with reference to
7 two motion vectors -- or more -- but the two would
8 satisfy Claim 40's derivation step.
9 MR. CARTER: I'll object to form and also to
10 the extent it's outside the scope of his declaration.
11 A. And I'm sorry. Could you repeat?
12 Q. Sure.
13 And I'll point something out to you in case
14 it's helpful, Professor.
15 There are several claims in the '808 patent
16 that use that same "deriving" language. One of them,
17 for example, is Claim 29. Another of them is Claim 40.
18 But they have that same phrase, "deriving the predicted
19 non-zero motion vector based at least in part on the
20 motion vector of the second segment and the motion
21 vector of a third segment neighboring the first
22 segment."

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1 And my question is: Do you agree that the
2 deriving step in Claim 40 can be accomplished by basing
3 the production of a motion vector at least in part on
4 two motion vectors, one from a second segment and one
5 from a third segment?
6 MR. CARTER: Object to form and to the extent
7 it's outside the scope.
8 A. Yes. I understand that this is the claim
9 language, and a person of ordinary skill would
10 understand that this deriving that is recited in
11 Claim 40 must be based at least in part. And so we
12 don't necessarily have -- a person of ordinary skill
13 wouldn't necessarily have a narrow understanding of the
14 word "based," but certainly a third segment can be
15 involved there. Whereas Claim 1, for example, refers
16 only to a second segment, this Claim 40 introduces a
17 third segment.
18 Q. And just looking at the deriving step here,
19 if one were to, for example, do a median, which may
20 devolve into an arithmetic mean, based on two segments,
21 the first segment and the third segment, would you agree
22 with me that they've -- and they produced a predicted

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1 non-zero motion vector, would you agree that they've
2 derived a predicted non-zero motion vector based at
3 least in part on the motion vector of the second segment
4 and motion vector of a third segment neighboring the
5 first segment?
6 MR. CARTER: Object to form and to the extent
7 it's outside the scope of his declaration.
8 A. The deriving in Claim 40 would be understood
9 by a person of ordinary skill to be required to in some
10 way be based at least on a second segment and a third
11 segment.
12 Moreover, by virtue of Claim 40 depending
13 from Claim 7, the limitation in Claim 7 of assigning
14 would need to be met. That assigning, in turn, pertains
15 to and would be understood by a person of ordinary skill
16 to pertain to a predicted non-zero motion vector or zero
17 motion vector for the skip coding mode, which under all
18 parties' agreed construction would depend on the
19 characteristics of the motion in image segments
20 surrounding -- it says "the macroblock in question." I
21 think a person of ordinary skill would understand we're
22 talking about the segment in question here.

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1 Q. And so what I'm trying to understand from
2 that answer is do you think that the deriving step, the
3 calculation, or the producing step where you actually
4 find out what your value of a predicted non-zero motion
5 vector is -- does that require calculating or using four
6 neighboring motion vectors or surrounding motion vectors
7 to do that calculation? Or can you accomplish it with
8 just two?
9 MR. CARTER: I'll object to the extent that's
10 outside the scope.
11 A. The actual calculation could involve fewer,
12 at least in the same sense as the median mode -- the
13 median prediction described in JM1, in some instances,
14 may involve fewer than three -- excuse me. Let me
15 rephrase.
16 The deriving component, as we are using that
17 term, of the median prediction mode disclosed in JM1
18 can, in some instances, directly involve fewer than
19 three.
20 Q. And as your testimony relates to the deriving
21 step at Claim 40, you agree that the deriving step in
22 Claim 40 can involve -- you used the term "actual

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1 calculation." I understand that to be in lieu of
2 deriving -- but can involve deriving based just on two
3 motion vectors.
4 MR. CARTER: Object as outside the scope.
5 Q. If it's helpful, I could direct you to a
6 paragraph in your declaration.
7 A. I would appreciate that, and I'm, in the
8 meantime, reading 40 again.
9 Q. If you could look at paragraph 139 of your
10 declaration, for example, it's a place where you give an
11 opinion about this limitation. And this is in the
12 context of Claim 29 in your paragraph 139, but it's the
13 same phrase.
14 A. I understand.
15 I'm sorry. Could you repeat the paragraph?
16 Q. Yes. Paragraph 139.
17 A. 1-3-9.
18 Q. Yes.
19 A. And then, as you can surmise, I'm going to be
20 asking for you to repeat the question.
21 Q. Sure.
22 Once you've had a chance to review

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1 paragraph 139 or anything else you need to review, let
2 me know, and I can ask the questions on this.
3 A. Thank you.
4 Okay. Yes. I'm ready for the question to be
5 repeated.
6 Q. Okay. Let me start with this. In Claim 29,
7 there is the phrase "the motion vector of the second
8 segment and the motion vector of a third segment
9 neighboring the first segment."
10 Do you understand the "a third segment
11 neighboring the first segment" to be along the image
12 segments surrounding the macroblock in question?
13 A. Yes.
14 Q. And here's my next question. Do you agree
15 that the deriving step of Claim 29 can be satisfied by
16 calculating the predicted non-zero motion vector based
17 on two motion vectors from neighboring segments, in the
18 claim called a second segment and a third segment?
19 A. Yes.
20 Q. And now I'd like to go back to Column 17.
21 And we've talked about the deriving step. Now I'd like
22 to talk about the association or associating aspect.

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1 And here we're looking at the agreed part of the
2 parties' construction of skip coding mode.
3 A. I'm at Column 17.
4 Q. And I think you and I agree that the
5 associating part of the skip coding mode definition in
6 Column 17 is not synonymous with the deriving step that
7 we just discussed.
8 A. Correct.
9 Q. What is your understanding of the meaning of
10 the associating aspect of the agreed part of the skip
11 coding mode definition?
12 A. And I'm going to, just as a check, search for
13 "associated" in the declaration.
14 Well, a person of ordinary skill would
15 understand that to associate is weaker than to assign.
16 Q. Maybe let's start with assign, and then we'll
17 turn back to associating.
18 So in the '808 patent -- and I think this is
19 true of all the independent claims, but we can just take
20 Claim 7 as an example. And this is in Column 26. This
21 is a decoding method with an assigning step, and I'd
22 like to get your understanding of what the assigning

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1 step requires.
2 A. The assignment would be understood by a
3 person of ordinary skill to directly impact the coding
4 of the segment.
5 Q. It may be my technical shortcoming. I may
6 need some follow-up questions to understand what that
7 means.
8 What do you mean by the assigning step in the
9 '808 patent claims would directly impact the coding of
10 the segment?
11 A. The assigning of a zero motion vector to a
12 segment means that that segment will be encoded into the
13 bitstream based on a motion vector of zero. It means
14 that it will be decoded at the decoder with respect to a
15 motion vector of zero, which is much more restrictive or
16 much more specific than the verb "associate." There may
17 be motion vectors associated that don't actually get
18 used or that don't become part of deriving directly or
19 that don't make it into the actual encoding and
20 decoding.
21 Q. Now I'd like to ask you about the assigning
22 step again. But rather than use the example of a zero

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1 motion vector, let's use the example of a predicted
2 non-zero motion vector. Does that make sense to you?
3 A. Yes.
4 Q. And so your understanding of the assigning
5 step is that if one assigns a predicted non-zero motion
6 vector for the skip coding mode for the first segment,
7 you haven't necessarily calculated that motion vector
8 yet, because deriving and assigning are different
9 things, but you know that it will have a predicted
10 motion vector. Is that fair to say?
11 A. And we're referring in Claim 7, for example?
12 Q. Yes.
13 A. And so 7 is a decoding claim. An assigned
14 motion vector -- in Claim 7, if a motion vector is
15 assigned to a segment, then that segment was predicted
16 using a non-zero motion vector.
17 Q. So your understanding of the assigning step
18 in the independent claims of the '808 patent is that you
19 only assign a motion vector after it's been calculated
20 in the case of a predicted non-zero motion vector?
21 MR. CARTER: Object to form.
22 A. I would like to adopt the revision I made to

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1 my old language and change "calculated" to "produced."
2 Because one could argue, for example, that in some cases
3 there might not be any adding, subtracting --
4 Q. That's fair.
5 A. But you produced one.
6 Q. Yeah. Let me rephrase my question with that
7 tweak.
8 Your understanding of the assigning step in
9 the independent claims of the '808 patent is that you
10 can only assign a motion vector after it's been produced
11 in the case of a predicted non-zero motion vector.
12 A. Well, I don't know that I implied order, and
13 I haven't thought about that. So I want to give that a
14 pause for a second but tell you that what I was thinking
15 and what my opinion is based on and what I believe would
16 be the understanding of a POSITA is that assigning and
17 deriving are not exactly the same. And whether there
18 may be some instances where they're the same and some
19 instances where they're not, I haven't fully analyzed
20 that.
21 Q. And I don't want to cut you off, but please
22 let me know when you've concluded your answer.

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1 A. But the production of a motion vector means
2 to me the same as deriving, means you produce an
3 instance -- a specific instance of a motion vector. The
4 assigning is that you assign a specific motion vector to
5 a segment.
6 Q. If we go back to Column 17 now. Now we're
7 looking at the associated or associating language as
8 opposed to the assigning or the deriving language.
9 Does the "associated with" language require a
10 specific motion vector? Or is it that a type of motion
11 vector is associated with each skip code macroblock in
12 the skip mode definition in Column 17?
13 A. My opinion is -- and I believe it's what a
14 person of ordinary skill would understand in 2002 --
15 that this language in the agreed upon portions of the
16 constructions involves the term "associate" with regards
17 to a specific motion vector, be it zero or be it
18 non-zero.
19 Q. As a practical matter, do you think that the
20 deriving step must be accomplished with four or more
21 neighboring image segments? That is, the only way to
22 satisfy the independent claims is to use four or more

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1 image segments to reach your specific motion vector,
2 thus when you do the deriving step you must also do four
3 or more image segments.
4 A. I disagree -- sorry.
5 MR. CARTER: Give me a chance to object.
6 I was just going to say I'll object as
7 outside the scope.
8 But go ahead.
9 Q. You disagreed that -- you don't think that
10 the only way to perform the deriving step is to use four
11 or more image segments, and that suggests to me that you
12 see some difference between the deriving and associating
13 step.
14 Can you explain how it would be that you
15 could accomplish the deriving step with two motion
16 vectors, for example, but then need the "associated
17 with" language in the skip mode construction with four
18 image segments?
19 MR. CARTER: I'll object, as all of this is
20 outside the scope, because none of these questions are
21 tied to any of the prior art, and that's what we're here
22 to discuss today is prior art and invalidity.

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1 MR. VERBONCOEUR: Just for the record, I
2 think we discussed Fröjdh's use of neighboring segments,
3 and I think we're about to get into that with Karczewicz
4 too.
5 MR. CARTER: Well, and be my guest. But as
6 of right now, all these questions are completely
7 divorced from the prior art, and you're getting into
8 areas that I think you and I both know are more relevant
9 to the ITC than they are here.
10 MR. VERBONCOEUR: I strongly disagree, and
11 I'll just state the position so that Dr. Havlicek can
12 hear it and then perhaps address the questions.
13 I think you've got a problem, in that
14 Karczewicz and Fröjdh don't talk about four or more
15 image segments. That's what I'm asking about, and
16 that's the reason I'm trying to get Dr. --
17 MR. CARTER: Well, then ask those questions.
18 Ask him questions about what his opinions are regarding
19 the disclosures in Fröjdh or the disclosures in
20 Karczewicz as articulated in his declaration and how
21 those meet the claim language. But asking vague
22 questions that are untethered to the prior art regarding

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1 what a person of ordinary skill in the art would
2 understand specific claim elements to mean as though
3 you're asking for claim construction is a different
4 thing.
5 MR. VERBONCOEUR: The starting point for any
6 invalidity analysis is the plain and ordinary meaning,
7 absent claim construction, from the perspective of a
8 person of skill in the art, and that's what I'm asking
9 about. Are you intending to stop me from asking these
10 questions?
11 MR. CARTER: No. But what I'm suggesting is
12 perhaps you should direct him to things in his
13 declaration or things that are at issue in this
14 proceeding, and what I'm hearing is questions that I
15 think we both know relate to things that are at issue in
16 the ITC.
17 MR. VERBONCOEUR: The ITC briefing is done.
18 I think the utility of these questions is for the IPR.
19 MR. CARTER: Okay. Well, then tie it to
20 things that are in his declaration or things that are in
21 the prior art.
22 MR. VERBONCOEUR: I'm tying it to the patent,

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1 which is the starting point for claim scope here. If
2 we --
3 MR. CARTER: You and I both know how this
4 works. Okay?
5 MR. VERBONCOEUR: Yes.
6 MR. CARTER: I don't need you to, on the
7 record, tell me how invalidity analysis works.
8 However, you're asking questions that on
9 their face don't say anything about his declaration,
10 don't say anything about any of the opinions he
11 specifically offered in said declaration, don't say
12 anything about what's in the institution decision or the
13 petition, and don't say anything about the prior art.
14 That's a little concerning to me.
15 And so you can ask whatever questions you
16 want, but I'm telling you that I'm going to police this
17 pretty closely to make sure we stay within the scope of
18 what we're here to talk about today.
19 MR. VERBONCOEUR: Okay. If you're going to
20 instruct your witness not to answer, you may do that.
21 We may have to raise it with the board. But I am going
22 to continue asking questions about what the '808 patent

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1 means, especially the challenged claims.
2 MR. CARTER: Okay. Keep them tethered to
3 what we're dealing with in this proceeding.
4 MR. VERBONCOEUR: And I believe that every
5 claim term I've asked about is, in fact, part of the
6 challenged claim.
7 MR. CARTER: But not everything you've asked
8 about is within the scope of his declaration.
9 MR. VERBONCOEUR: If he doesn't have an
10 opinion on these, he's free to state that, that is, if
11 he doesn't have an opinion as to what the claim scope
12 is. That's his prerogative. He can do that.
13 MR. BAITCHEV: Before we get started, I'm
14 going to lower the blinds.
15 MR. CARTER: Yeah. It's getting a little
16 bright in here.
17 MR. VERBONCOEUR: Do you want to take a break
18 off the record so we can --
19 THE REPORTER: Sure.
20 (Off the record: 2:18 p.m. to 2:27 p.m.)
21 Q. All right. Professor, welcome back.
22 A. Thank you.

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1 Q. All right. So we've been looking at
2 Column 17, lines 43 to 53.
3 A. Yeah.
4 Q. That's Exhibit 2, which is the '808 patent.
5 And in your declaration, you've got these two
6 grounds, one of which you've called the Karczewicz
7 ground. The other you've called the Fröjdh ground. Do
8 you agree with that?
9 A. I do.
10 Q. And is it your opinion that both of those
11 grounds anticipate or render obvious the skip coding
12 mode that was defined in the '808 patent?
13 A. Yes.
14 Q. So now what I'm going to do is I'm going to
15 ask you about part of that skip mode definition, and
16 specifically I want to ask you about the terms "active"
17 and "non-active." And these are the terms that are --
18 they're lines 47 through 49 in Column 17. Do you see
19 those?
20 A. I do.
21 Q. Okay. What is your understanding of
22 "non-active" as it appears in the definition of skip

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1 mode in the '808 patent?
2 A. My understanding, which I believe is the same
3 as the understanding of a POSITA, is that non-active
4 means zero motion vector.
5 Q. You read non-active to be synonymous with
6 zero.
7 A. Not exactly synonymous, because an active
8 motion vector could also be zero. But the distinction
9 is, in my understanding -- which I believe, as I said,
10 is the same as that of a POSITA -- is that a non-active
11 motion vector is zero.
12 Q. A non-active motion vector will always be
13 zero.
14 A. Yes.
15 Q. Now I'd like to ask you about your
16 understanding of what "active" means on Column 17,
17 line 49.
18 What is your understanding of "active" in the
19 skip mode definition?
20 A. Again, I'm going to state it all out, because
21 I think that will be clarifying it.
22 My understanding, which, in my opinion, is

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1 what would be the understanding of a person of ordinary
2 skill, is that active means not necessarily zero.
3 Q. By active motion vector meaning not
4 necessarily zero, what you mean is it is a predicted
5 motion vector.
6 A. With regards to the construction, you mean.
7 I have to disagree with that.
8 Q. Then maybe you can explain what you mean by
9 an active motion vector in the skip mode construction is
10 not necessarily zero.
11 A. We're talking about compensating for regional
12 and global motion. And so when an encoder, for example,
13 derives or produces a motion vector that's non-zero and,
14 as an example, considers it as a candidate motion
15 vector, let's say, for a segment, well, that's an active
16 motion vector.
17 When an encoder calculates a motion vector
18 that's zero or in some other way produces -- that's a
19 better word -- a motion vector that's zero -- because it
20 may inherit one from a segment. When it goes a step
21 further and makes an assignment of that zero motion
22 vector, then at least when the macroblock is encoded

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1 using what I believe you called a standard skip mode,
2 that certainly is non-active.
3 Q. So in the non-active scenario, we have --
4 it's always going to be a zero motion vector. Whereas
5 in the active scenario, it's not necessarily zero?
6 A. It might be zero, it might not.
7 Q. Okay. I am going to introduce another
8 exhibit. I think we are up to Number 6.
9 A. Sorry. I'd like to add a small piece to that
10 last answer.
11 Q. Sure.
12 A. You know, we spoke before about ordering.
13 Q. Uh-huh.
14 A. And, you know, this is where I'm giving pause
15 on this. Because whether it's active or non-active, I
16 think -- in my understanding -- which, again, in my
17 opinion, is consistent with what a person of ordinary
18 skill would understand -- there's not a clear ordering
19 there, because non-active should be associated, in my
20 mind -- and I believe in the mind of the person of
21 ordinary skill -- with selecting an encoding that
22 explicitly implies the zero motion vector.

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1 Q. Okay. And I'm going to try to keep those
2 answers together just for the sake of the record --
3 because I said that comment about Exhibit 6 -- so I'll
4 ask the question in a way where you can clarify as
5 needed.
6 A. Okay.
7 Q. So for a non-active scenario, the value of
8 any motion vector is not necessarily zero. It might be,
9 it might not be -- I said that backwards, didn't I? Let
10 me reask the question.
11 For an active scenario, the value of any
12 motion vector is not necessarily zero. It might be, it
13 might not be.
14 For a non-active scenario, the value of a
15 motion vector is zero, but your -- there's not, in your
16 view, a clear order to the associating, assigning, and
17 deriving here that we've been discussing.
18 A. Specifically because, in my understanding --
19 which, again -- I just keep saying it over and over -- I
20 believe would be the understanding -- it's my opinion
21 that that would be the understanding of a POSITA.
22 "Non-active" means you encode in a way that means the

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1 motion vector is zero.
2 Q. Whereas in active, you're encoding in a way
3 that does not necessarily imply the motion vector is
4 zero.
5 A. Yes.
6 Q. So let's mark Exhibit 6 now.
7 (Exhibit Number 6 marked.)
8 Q. And, Professor, you have what's been marked
9 in front of you as Exhibit 6. Do you recognize
10 Exhibit 6?
11 A. I do.
12 Q. Okay. And if you look at -- on the very
13 first page of Exhibit 6, there is a paragraph, I'll call
14 it, that begins "Inventors," and the first name is
15 Karczewicz, Marta. Do you see that?
16 A. I do.
17 Q. Do you recognize Exhibit 6 as what we've been
18 calling the Karczewicz reference?
19 A. Yes.
20 Q. There is a second name listed under inventors
21 on Exhibit 6, and that is Lainema, Jani. Do you see
22 that?

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1 A. I do.
2 Q. Do you recognize that name as the same
3 inventor listed on the '808 patent, Exhibit 2?
4 A. I do.
5 Q. And if you look at the first page of
6 Exhibit 6, the applicant here is Nokia.
7 And do you agree that if you look at the
8 first page of Exhibit 2, the '808 patent, the assignee
9 there is Nokia?
10 A. They are both -- they both contain the word
11 "Nokia."
12 Q. One says "Nokia, Inc.," and the other says
13 "Nokia Corporation."
14 A. I think you're getting over my legal
15 knowledge here, but there's also Nokia Mobile Phones
16 Limited, which is what I was referring to.
17 Q. Oh, that's right. I was looking at the
18 second -- yeah. Okay.
19 So I guess it's fair to say that on the
20 Exhibit 6, Karczewicz, there are some Nokia entities.
21 And then Exhibit 2, the '808 patent, there's a
22 differently named Nokia entity.

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1 A. They certainly both say "Nokia." I can agree
2 to that.
3 Q. And you should have an electronic version of
4 Exhibit 6, the Karczewicz reference.
5 But I'd like to ask you about your
6 understanding of MCI bit. It's something referred to in
7 Karczewicz.
8 MR. CARTER: Is the Karczewicz exhibit also
9 OCRed?
10 MR. VERBONCOEUR: It should be.
11 MR. CARTER: Okay. Thank you.
12 A. I think it is my Exhibit 1006.
13 And indeed it is.
14 Q. Correct.
15 And in case it's helpful, there is a
16 page that has 37 -- the number "37" at the top of the
17 page. I think it is page 38 of 66. That may be the
18 first mention of MCI, but you can feel free to check for
19 yourself.
20 A. I'll represent to you that control-F says
21 it's on the page numbered 37 for a first occurrence.
22 Q. And just for clarity of the record, we're

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1 looking here at Exhibit 6, the Karczewicz reference.
2 And the top of the page has the number "37." The bottom
3 of the page says "page 38 of 66." Do you agree with
4 that, Doctor?
5 A. I do.
6 And you have a question pending before me,
7 and I think I remember it, but for the sake of clarity,
8 let's ask you to repeat it.
9 Q. In the Karczewicz reference, what is the MCI
10 bit?
11 A. MCI is a bit that is a -- the name is an
12 acronym for motion coefficient indicator. And this bit
13 is one, if motion coefficients are present -- which may
14 be refinement or non-refinement motion coefficients,
15 non-refinement meaning they aren't part of a refinement
16 field -- and otherwise, if there are not such motion
17 coefficients, the MCI bit is zero.
18 Q. Okay. I'd like to direct your attention
19 to -- I believe it will be page 18 of 66, but let me
20 confirm that.
21 Yes.
22 And if you would like to check your opinion

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1 on this part of Karczewicz, I'm looking at, for example,
2 paragraph 139 of your declaration. But you also cite to
3 this part of Karczewicz in other places, so I don't want
4 to represent to you that's the only place. You cite to
5 this quite a bit, actually.
6 A. Understood.
7 Q. But the page labeled "page 18 of 66," which
8 has a "17" at the top of the page, at lines 10 through
9 14 is where I'd like to direct your attention. And in
10 your declaration, this is cited as 17, colon, 10 through
11 14.
12 And what I'd like to ask about is the
13 phrase -- well, let me just read it to you.
14 "The segment may be represented as a
15 prediction field only. This situation may arise when
16 the segment can be adequately represented in terms of
17 the motion field of one or more of its previously coded
18 neighbors." Do you see that?
19 A. I do.
20 Q. And do you think that this phrase here from
21 Karczewicz discloses the language we were talking about
22 in the construction of skip coding mode that is

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1 "depending on the characteristics of the motion in image
2 segments surrounding the macroblock in question"?
3 A. Okay. I'm sorry. Could you again repeat the
4 question, please?
5 Q. Right.
6 Do you think that this excerpt of Karczewicz,
7 Karczewicz page 17, lines 10 through 14, discloses to a
8 person of skill in the art the part of the construction
9 of skip coding mode that is "depending on the
10 characteristics of the motion in image segments
11 surrounding the macroblock in question"?
12 A. I do.
13 Q. Why do you believe that a person of ordinary
14 skill in the art reading 17, 10 through 14, of
15 Karczewicz would understand that this would include --
16 that is, previously coded neighbors -- would include
17 four or more image segments?
18 A. I believe and it is my opinion -- and I
19 believe the opinion of a person of ordinary skill or the
20 understanding of a person of ordinary skill -- that the
21 description -- the disclosure in Karczewicz page 17,
22 lines 10 through 14, involves four or more surrounding

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1 segments, using the language of the '808 and the agreed
2 upon elements of the construction for skip coding mode,
3 for at least two reasons.
4 And the first of those reasons is that the
5 disclosures found, for example, in the provisional
6 '808 application rely on the median prediction of JM1.
7 And when I look into the median prediction of JM1,
8 again, found in Section 3.4.5.1.1, I find that there is
9 an association of segments and potentially their motion
10 vectors A, B, C, and D to the segment E. So that meets
11 my understanding and that of a POSITA of "surrounding."
12 Then the deriving component may involve a median of
13 three of those, or it may be involving some deriving
14 process involving fewer.
15 At the same time, then, when a person of
16 ordinary skill considers the collective teachings of
17 Karczewicz, there is a disclosure on the following page,
18 the page numbered 18, specifically at line 21, which
19 reads "a general 16-by-16 pixel segment has four
20 immediately neighboring 8-by-8 pixel sub-segments that
21 may be considered."
22 And that is my basis.

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1 Q. Okay. One reason involved the
2 '808 provisional's reference to JM1, and then the second
3 involved page 18, lines 21 through 23. And just for
4 clarity of the record, it's also marked "page 19 of 66"
5 at the bottom of that page.
6 A. That's correct.
7 Q. Okay. And I want to talk to you about
8 Karczewicz page 18, lines 23 through -- 21 through 23,
9 marked "page 19 of 66" at the bottom.
10 When Karczewicz is describing four
11 immediately neighboring 8-by-8 pixel sub-segments that
12 may be considered, it's talking about there is a block
13 immediately above the current macroblock and there is a
14 block immediately to the left, and each of those two
15 blocks, as 16-by-16 blocks, can be subdivided into
16 smaller 8-by-8 blocks. Is that your understanding?
17 A. Could you please repeat?
18 Q. Yes. And I think we could actually -- to
19 help us, we can look at Figure 10 in JM1, just so we can
20 have a reference point of a current macroblock and then
21 neighboring macroblocks or surrounding macroblocks that
22 have labels in them.

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1 And so with Figure 10 of JM1 in mind, just so
2 we can situate ourselves on a grid, I'd like to ask you
3 about page 18 at lines 21 through 23 of Karczewicz.
4 And is it your understanding that Karczewicz
5 is describing a situation here where if a current
6 macroblock is labeled "E," as in Figure 10 of JM1, we're
7 looking at Neighbor B and Neighbor A, both of which have
8 been subdivided into four 8-by-8 subsections, also known
9 as sub-segments?
10 A. Okay.
11 Q. Should I repeat the question?
12 A. Yes, sir, please.
13 Q. Okay. So I'm asking about page 18 of
14 Karczewicz, also labeled "page 19 of 66." And there is
15 this discussion in the second full paragraph that begins
16 "In the preferred embodiment of the invention,
17 neighboring segments can be divided into smaller
18 sub-segments. Specifically, each 16-by-16 pixel segment
19 may be divided into four 8-by-8 pixel blocks, and the
20 motion field models for those sub-segments can be used
21 to derive prediction fields."
22 And then there are the lines, starting at

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1 line 21 through 23, that you directed me to as a reason
2 a person of skill in the art would see that there are
3 four image segments that are considered in the motion
4 vector association process.
5 And what I'm trying to figure out is if you
6 agree with me that looking at Figure 10 of JM1,
7 spatially speaking, those -- what Karczewicz is
8 describing is that we have a current macroblock E, and
9 then we have a segment above it labeled "B," a segment
10 to the left of it labeled "A," and each of A and B are
11 subdivided into four 8-by-8 pixel blocks.
12 A. In Figure 10.
13 Q. Using Figure 10's labeling --
14 A. Yeah.
15 Q. -- but looking at page 18, lines 17 through
16 29 of Karczewicz.
17 A. Sure. Yes.
18 Q. Okay. I think we agree, then.
19 A. Yeah.
20 Q. Okay. And in your view, that's four
21 segments, because one of each of the touching 8-by-8
22 sub-segments could be used for the prediction field in

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1 Karczewicz.
2 A. Yeah, could you repeat?
3 Q. Yeah.
4 So when you say that a person of skill in the
5 art would see the four image segments surrounding the
6 macroblock in question in Karczewicz -- you directed me
7 to page 18 of Karczewicz -- that describes a scenario
8 where the above neighbor and the left neighbor have been
9 broken into four 8-by-8 sub-segments each. And the way
10 I read Karczewicz here, what it's saying is that the
11 motion vector -- the motion field prediction can be done
12 based on one of those 8-by-8 sub-segments. So your view
13 is that four potential sub-segments are considered,
14 therefore that meets the agreed on portions of the skip
15 coding mode.
16 A. Yes. And this is an example where there are
17 four. And these lines which I cited and directed you to
18 call out the example of partitioning. The language
19 that's used here is "directly above" and "immediately
20 left" appearing in these cited lines.
21 And this is an example of Karczewicz
22 explaining how the segments -- the neighboring segments

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1 that are considered -- and I want to point out that my
2 understanding, which I believe to be the same as that of
3 a person of ordinary skill, is that the whole reason for
4 using the word "segment" is that macroblocks might
5 themselves be the basis of motion estimation or they may
6 be subdivided.
7 And this is an example of subdividing that's
8 illustrative of, you know, her disclosure -- or I
9 shouldn't say that, because there's two authors.
10 Karczewicz's disclosure that the segment can be
11 adequately represented in terms of the motion fields of
12 one or more of its previously coded neighbors. And that
13 occurs, you know, on the page right before this in
14 lines 10 through 14.
15 Q. And I don't want to cut you off, so let me
16 know when --
17 A. That's -- yeah.
18 Q. Now I'd like to ask you about this -- in your
19 declaration, you give opinions about Karczewicz's coding
20 modes, as you call them. And I'll direct you to
21 paragraphs 99 and 100 of your declaration, but you use
22 that term, "coding modes," throughout. So feel free to

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1 look around as you need, but I'm going to look to those
2 two paragraphs to ask some questions.
3 A. I closed the PDF.
4 And in the meantime, I'll get to -- you said
5 99.
6 Q. That's correct. Yeah. You can use the local
7 as well.
8 MR. CARTER: It's on page 62, if that's
9 helpful.
10 A. Okay.
11 Q. Okay. And in paragraph 99, you refer to a
12 first coding mode of Karczewicz. Do you see that?
13 A. I do.
14 Q. And that first coding mode, there are two
15 citations there. One is page 17, and the other is
16 page 31. I think it's referring to the same thing, but
17 feel free to check both. And I'll just look at page 31,
18 but, again, feel free to look through Karczewicz.
19 My question is: If it's your understanding
20 that the first coding mode you're pointing to in
21 Karczewicz in paragraph 99, for example, is where,
22 quote, the segment can be coded using only prediction

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1 motion vector fields extrapolated from a neighboring
2 segment -- and that's at page 31, lines 16 through 17,
3 of Karczewicz where you cite in your declaration.
4 Sorry. Okay. How is this first coding mode
5 that you referred to in page -- or paragraph 99 of your
6 declaration citing 31, lines 16 and 17 of Karczewicz --
7 how is it signaled?
8 A. Well, Karczewicz teaches, actually, multiple
9 ways that it could be signaled, and in all of them -- at
10 least two. And in both of the at least two, the MCI bit
11 is zero.
12 And I'm continuing.
13 Given that the MCI bit is zero, one
14 alternative is to follow the teaching of Karczewicz
15 disclosed at page 32 in lines 17 through 22, which teach
16 that one bit is sent to the decoder 14 to signal whether
17 the prediction field of a neighbor is used or not. And
18 so an MCI bit of zero combined with a one in this
19 otherwise unnamed bit would signal that coding mode,
20 first coding mode.
21 Q. Okay.
22 A. Alternatively, Karczewicz teaches at page 18

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1 in lines 6 through 16 that the data stream transmitted
2 from encoder to decoder is therefore likely to contain
3 both motion coefficient data and a variety of selection
4 data, which parenthetically is, i.e., non-motion
5 coefficient data instructing the decoder to perform
6 different operations.
7 And so an alternative to the otherwise
8 unnamed bit that I just referred to is that a person of
9 ordinary skill would understand that the selection data
10 could be used to signal that MCI bit is zero, there is
11 no motion coefficient information, but a neighbor is
12 being used. And...
13 Q. I don't want to cut you off, so let me know
14 when you've --
15 A. Yeah.
16 Q. You've finished your answer?
17 A. I left the conjunction because I have another
18 piece coming.
19 Q. Okay.
20 A. And as an example, this teaching includes at
21 page 18, lines 9 through 11, "if the decoder receives
22 non-motion coefficient data, it should construct a

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1 prediction motion field model using the neighboring
2 segments or," as we were just discussing, "sub-segments
3 indicated by the selection data."
4 And so this is teaching a person of ordinary
5 skill that the selection data may be used to signal that
6 the MCI bit is zero but neighbors will be used.
7 Q. So looking at what you referred to as a first
8 coding mode in paragraph 99 of your declaration, a
9 person of skill in the art reading Karczewicz would be
10 aware of at least two ways of signaling that first
11 coding mode, one of which is to use an MCI bit of zero
12 plus the unnamed bit referred to on page 32 of
13 Karczewicz at lines 17 through 20, or alternatively,
14 they could use an MCI bit of zero and use what's
15 described as selection data at line 7 of page 18 of
16 Karczewicz.
17 A. And I will accept your representation that
18 those line numbers were accurate, but I think we
19 understand that this is what I was talking about. Yes.
20 Q. Okay. Thank you for that.
21 Now I'd like to ask about the next paragraph
22 in your declaration, which is paragraph 100.

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1 A. And I might need a short break --
2 Q. Sure.
3 A. -- if that's okay with you.
4 Q. Yeah. Absolutely.
5 A. And then we can resume, if that's okay.
6 Q. No, I haven't asked a question yet. So why
7 don't you take a short break, and then we'll come back.
8 A. Thank you.
9 Q. Yes.
10 (Off the record: 3:21 p.m. to 3:30 p.m.)
11 Q. Welcome back, Doctor.
12 A. Thank you.
13 Q. And just before the break, I directed you to
14 paragraph 100 of your declaration. Are you still there?
15 A. I am.
16 Q. We just talked about this concept of what you
17 called the first coding mode in Karczewicz, and now I'd
18 like to talk about this concept of what you call a
19 second coding mode in Karczewicz. Does that make sense
20 to you?
21 A. Yes.
22 Q. Okay. And this second coding mode in

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1 Karczewicz you describe -- and I'm quoting now from your
2 declaration -- it says "The segment in question may be
3 coded using a motion model determined specifically for
4 the segment using the reference frame. In this case, as
5 described above, the prediction field is set to zero and
6 the refinement field is set equal to the motion field
7 model determined from the reference frame."
8 And then I'm skipping a citation and reading.
9 "In other words, in Karczewicz's second
10 coding mode, the motion field for a segment may be coded
11 without using the motion information of neighboring
12 segment, parentheses, S."
13 So do you understand this second coding mode
14 that you've described in your declaration?
15 A. Yes.
16 Q. And there are two places you cite in
17 Karczewicz for the second coding mode. One of them is
18 page 31 of Karczewicz, and I can direct your attention
19 there. Feel free to look at the second citation.
20 But in part of page 31 of Karczewicz, you
21 cite to the second coding mode. It says "Alternately,
22 the segment can be coded using only a compressed motion

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1 vector field without utilization of a prediction field."
2 Do you see that?
3 A. Yeah, there might be a miscite there. Could
4 you repeat the line numbers and text --
5 Q. Sure.
6 A. -- you're referring to?
7 Q. Yeah. So I'm looking at your paragraph 100.
8 A. Yes.
9 Q. This is on the bottom of page 62. There are
10 citations in two places of Karczewicz for this second
11 coding, one of which is page 31, lines 20 through 21.
12 And I thought that what you were referring to
13 here is the fact that the segment could be coded using
14 only a compressed motion vector field without
15 utilization of a prediction field, that is. The
16 distinction between the first coding mode and the second
17 is that one coding mode uses a prediction field and the
18 other one does not.
19 A. Yeah. Just one second ago, the problem was
20 that my eye was still on the citations in the second
21 line of paragraph 99, and so I was not getting your
22 cited lines. But yes. I'm with you now.

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1 Q. Okay. And I think you agree that for the
2 first coding mode, you're describing a coding mode in
3 Karczewicz where you are going to use some prediction
4 field, and that could be based on a neighboring segment
5 or a neighboring sub-segment or potentially more than
6 one. Whereas in the second coding mode, what Karczewicz
7 is describing is that a segment can be coded without
8 utilizing a prediction field.
9 A. That is correct.
10 Q. How would a person of skill in the art
11 understand that what you describe as the second coding
12 mode in paragraph 100 of your declaration -- how would
13 that second coding mode be signaled?
14 A. The second coding mode would, first and
15 foremost, have an MCI bit of one. And after that --
16 clearly neighbors are not being used, so there are,
17 again, alternatives. But probably the simplest one
18 would be -- again, referring to the disclosure found at
19 page 32 of Karczewicz in lines 18 through 22 -- the bit
20 that I previously referred to as the otherwise nameless
21 bit would be a zero.
22 Q. When the nameless bit on page 32 is a one, a

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1 decoder knows that there is a prediction field of a
2 neighbor used. And then when the nameless bit is a
3 zero, the decoder knows that there is no prediction
4 field used.
5 A. No prediction field of a neighbor, correct.
6 And there would be, again, the possibility of using the
7 selection data. It's more complicated.
8 Q. So a person of skill in the art looking at
9 the second coding mode, they would have their MCI bit,
10 as you described, and then they could either do this
11 nameless bit on page 32 of zero or have some selection
12 data that was described earlier in Karczewicz to inform
13 the decoder that no prediction field of a neighbor is
14 used.
15 A. At least those two alternatives.
16 MR. VERBONCOEUR: With that, I have no
17 further questions. Thank you.
18 MR. CARTER: Could we just take, like, a
19 super short break? I don't think I'm going to have any
20 redirect, but I just need to double-check.
21 MR. VERBONCOEUR: Sure.
22 MR. CARTER: All right. Thanks. Let's go

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1 off the record for a minute.
2 (Off the record: 3:38 p.m. to 3:48 p.m.)
3 MR. CARTER: All right. We can go back on
4 the record long enough for me to say I have no redirect.
5 MR. VERBONCOEUR: Okay. Great.
6 Doctor, thank you very much for your time.
7 THE WITNESS: Thank you.
8 THE REPORTER: Okay. And then I have your
9 order as a rough draft today and the final by Wednesday.
10 MR. VERBONCOEUR: If that's what they said,
11 then that's what you should do.
12 THE REPORTER: Okay. Great.
13 And would you like to order the transcript?
14 MR. CARTER: I think we have a standing
15 order.
16 (Proceedings concluded at 3:48 p.m.)
17
18
19
20
21
22

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1
2 C E R T I F I C A T E
3 I, Crystal Hereford, RPR, Certified Reporter and
4 Notary Public within and for the State of California
5 do hereby certify:
6
7 That DR. JOSEPH P. HAVLICEK, the
8 witness whose deposition is hereinbefore set forth,
9 was duly sworn by me before the commencement of such
10 deposition and that such deposition was taken before
11 me and is a true record of the testimony given by such
12 witness.
13 I further certify that the adverse party,
14 was represented by counsel at the deposition.
15
16 I further certify that the deposition of
17 DR. JOSEPH P. HAVLICEK, occurred at the offices
18 of Perkins Coie, 11452 El Camino Real, Suite 300,
19 on Friday, February 21, 2025 commencing at
20 9:09 a.m. PST to 3:48 p.m. PST.
21 I further certify the inspection, reading
22 and signing of said deposition were NOT WAIVED by

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1 counsel for the respective parties and by the witness.
2
3 I further certify that I am not related to
4 any of the parties to this action by blood or
5 marriage, I am not employed by or an attorney to any
6 of the parties to this action, and that I am in no way
7 interested, financially or otherwise, in the outcome
8 of this matter.
9 IN WITNESS WHEREOF, I have hereunto set my
10 hand this 26 day of February 2025.
11
12
13 Crystal Hereford
14
15 _____
16
17 NOTARY PUBLIC IN AND FOR THE
18 STATE OF CALIFORNIA
19
20
21
22

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