

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

3 AMAZON.COM, INC.,)
4 AMAZON.COM SERVICES)
5 LLC,) CASE NO.:
6) IPR2024-00604
7 Petitioner,)
8) U.S. Patent No.
9 VS.) 10,536,714
10)
11 NOKIA TECHNOLOGIES OY,)
12)
13 Patent Owner.)

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17 VS.) U.S. Patent No.
18) 10,536,714
19 NOKIA TECHNOLOGIES OY,)
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21 Patent Owner.)

16 -----
17 ORAL AND REALTIMED DEPOSITION OF
18 CHARLES D. CREUSERE
19 JANUARY 20, 2025
20 -----

21 JOB NO.: 567226

22 PAGES: 1 - 132

REPORTED BY: ANNETTE PELTIER

Transcript of Charles D. Creusere
Conducted on January 20, 2025

2

1 ORAL, REALTIMED DEPOSITION OF CHARLES D.
2 CREUSERE, produced as a witness at the instance
3 of the Patent Owner, and duly sworn, was taken in
4 the above-styled and numbered cause on
5 January 20, 2025, from 8:55 a.m. to 11:54 a.m.,
6 before Annette Peltier, CSR, Texas Certified
7 Realtime Reporter, in and for the State of Texas,
8 reported by machine shorthand, at the Courtyard
9 by Marriott, Las Cruces, 456 E. University
10 Avenue, Las Cruces, New Mexico, 88005 pursuant to
11 the United States Patent and Trademark Office
12 Rules of Civil Procedure and the provisions
13 stated on the record or attached hereto.

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A P P E A R A N C E S

ON BEHALF OF THE PETITIONER:

JEFFREY LIANG, ESQUIRE
Sheppard Mullin
1540 El Camino Real
Suite 120
Menlo Park, CA 94025
650.815.2600

ON BEHALF OF THE PATENT OWNER:

MITCH VERBONCOEUR, ESQUIRE
McKool Smith, P.C.
300 Crescent Court
Suite 1200
Dallas, Texas 75201
214.978.4000

EMILY R. TANNENBAUM, ESQUIRE
McKool Smith, P.C.
1301 Avenue of the Americas
32nd Floor
New York, NY 10019
212.402.9441

Transcript of Charles D. Creusere
Conducted on January 20, 2025

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Exhibits

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Nokia Exhibit 2010, p. 4
Amazon.com v. Nokia
IPR2024-01505

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Conducted on January 20, 2025

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1	THE COURT REPORTER: Do you need a	08:55:18
2	copy of today's deposition?	08:56:45
3	MR. LIANG: I don't.	08:56:47
4	MR. VERBONCOEUR: Real-time?	08:59:01
5	THE COURT REPORTER: Yes, here you	08:59:04
6	go.	08:59:07
7	CHARLES CREUSERE,	09:00:37
8	Having been first duly sworn, testified upon his	09:00:37
9	oath as follows:	09:00:40
10	EXAMINATION	09:00:40
11	BY MR. VERBONCOEUR:	09:00:41
12	Q. Good morning, Doctor.	09:00:41
13	A. Good morning.	09:00:49
14	Q. My first question is: How do you	09:00:49
15	pronounce your last name?	09:00:51
16	A. Creusere.	09:00:52
17	Q. Creusere. Okay.	09:00:53
18	As someone with a long last name, I	09:00:54
19	can sympathize, Dr. Creusere.	09:00:59
20	I take it this is not your first	09:01:00
21	deposition?	09:01:02
22	A. No.	09:01:02

Transcript of Charles D. Creusere
Conducted on January 20, 2025

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1	Q. How many times have you been deposed?	09:01:03
2	A. Roughly 20.	09:01:05
3	Q. Okay. So you generally know the process	09:01:06
4	of me asking you questions, you answering the	09:01:08
5	questions unless your counsel instructs not to?	09:01:11
6	A. Yes, I do.	09:01:14
7	Q. Will you agree if you don't understand one	09:01:15
8	of my questions to let me know so that I can	09:01:17
9	rephrase it?	09:01:20
10	A. I certainly will.	09:01:21
11	Q. What did you do to prepare for today's	09:01:22
12	deposition?	09:01:25
13	A. I reviewed my declarations. I reviewed	09:01:26
14	the supporting references related to my	09:01:30
15	declarations, the exhibits. I reviewed the PTAB	09:01:35
16	decision to institute. I reviewed the patent	09:01:41
17	owner's preliminary response.	09:01:46
18	I think -- I think that's about -- and	09:01:52
19	of course -- and, of course, the patents-in-suit,	09:01:55
20	the '714 patent, as well.	09:01:57
21	Q. And I see that you brought a number of	09:01:59
22	documents?	09:02:02

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1	A. Yes.	09:02:03
2	Q. Can you let me know what those documents	09:02:04
3	are that you brought?	09:02:06
4	A. These are all clean copies, as well.	09:02:06
5	They're not marked.	09:02:09
6	This first folder contains both of my	09:02:10
7	declarations, as well as the decision to	09:02:12
8	institute both of the IPRs; and the second folder	09:02:14
9	contains a copy of the '714 patent, a copy of	09:02:19
10	Brushare (phonetics), a copy of Karczewicz, a	09:02:24
11	copy of Rusert --	09:02:24
12	(Reporter Clarification.)	09:02:24
13	THE WITNESS: Rusert, R-U-S-E-R-T.	09:02:26
14	Karczewicz, I don't even want to try to spell.	09:02:30
15	A. But Lin, a copy of Lin; a copy of the	09:02:33
16	Exhibits 17, 108, and 109 relating to Nakamura,	09:02:39
17	Exhibit 1 -- 110 relating to WD40, the exhibits	09:02:46
18	from my declaration, and Exhibit -- excerpts of	09:02:51
19	Exhibit 1015, '833 file history, and then the	09:02:57
20	patent owner Exhibit 2007 Tai.	09:03:03
21	Q. Okay. Thank you for that.	09:03:06
22	I want to ask you something about your	09:03:08

1	declarations.	09:03:11
2	There are two IPRs here, one 604, one	09:03:12
3	605?	09:03:17
4	A. That is correct, yes.	09:03:17
5	Q. And you submitted a declaration in both of	09:03:18
6	them?	09:03:21
7	A. That is correct, as well.	09:03:22
8	Q. And I'm hoping to streamline things so	09:03:23
9	that we can refer to just one of those two	09:03:27
10	declarations instead of having to look for the	09:03:29
11	information we're seeking in both declarations.	09:03:29
12	Would you agree that the opinions in	09:03:32
13	both are substantially similar?	09:03:34
14	A. I would agree that they are substantially	09:03:35
15	similar, and I agree that -- that simplifying	09:03:37
16	this by focusing on one is a good idea.	09:03:39
17	Q. Okay. Thank you.	09:03:42
18	Did you meet with counsel to prepare	09:03:43
19	for your deposition?	09:03:44
20	A. I did.	09:03:45
21	Q. For how long did you meet with counsel?	09:03:46
22	A. I met with counsel for relatively short	09:03:48

Transcript of Charles D. Creusere
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1	meetings on Thursday and Friday via Zoom, and	09:03:52
2	then I met with counsel in person yesterday for	09:03:56
3	most of the day.	09:03:58
4	Q. Did you meet with anybody else other than	09:04:00
5	counsel to prepare for today's deposition?	09:04:02
6	A. I met with -- well, as part of, at least,	09:04:05
7	one or two of the meetings, there was another	09:04:10
8	lawyer involved, as well.	09:04:13
9	Q. Other than lawyers, did you meet with	09:04:14
10	anybody to prepare for today's deposition?	09:04:17
11	A. No, I did not meet with anybody other than	09:04:18
12	lawyers.	09:04:20
13	Q. Okay. Other than the exhibits that you	09:04:20
14	just listed off from the two binders in front of	09:04:24
15	you, did you consult any other documents to	09:04:27
16	prepare for today's deposition?	09:04:29
17	A. No, I can't think of any other documents I	09:04:44
18	consulted.	09:04:48
19	Q. Okay. Thank you.	09:04:48
20	MR. VERBONCOEUR: And I'd like to	09:04:49
21	introduce an exhibit now, which should not be a	09:04:50
22	surprise, the '714 patent.	09:04:54

Transcript of Charles D. Creusere
Conducted on January 20, 2025

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1	THE WITNESS: Okay.	09:04:58
2	(Whereupon Exhibit Number 1 was	09:04:58
3	marked for identification.)	09:04:58
4	MR. VERBONCOEUR: Let's take a	09:04:58
5	break.	09:05:29
6	(Break taken from 9:05 a.m. to	09:05:29
7	9:06 a.m.)	09:06:24
8	Q. (BY MR. VERBONCOEUR) Okay. So you have a	09:06:25
9	copy of the '714 patent?	09:06:27
10	A. Yes, I have got the marked copy.	09:06:28
11	Q. Okay. So, Dr. Creusere, you have what's	09:06:40
12	been marked as Exhibit 1 in front of you.	09:06:42
13	Do you agree that's the '714 patent	09:06:44
14	that's the issue of today's deposition?	09:06:46
15	A. Yes, it certainly appears to be.	09:06:50
16	Q. Thank you.	09:06:53
17	I'd like to ask you about your	09:06:54
18	interpretation of the claims of the '714 patent.	09:06:56
19	And if you could, please turn with me	09:06:59
20	to claim 23 of the '714 patent.	09:07:01
21	A. (Complying.)	09:07:03
22	Okay, I'm looking at 23.	09:07:15

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Transcript of Charles D. Creusere
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1	Q. Dr. Creusere, you've read claim 23 before?	09:07:17
2	A. Yes, I have.	09:07:20
3	Q. Okay. And I'd like to ask about your	09:07:21
4	understanding of some of the technical terms.	09:07:23
5	And I know that you opine on some of	09:07:25
6	these in your declaration; so if you need to see	09:07:27
7	that, let me know.	09:07:30
8	Let's talk about what a spatial motion	09:07:31
9	vector prediction candidate is.	09:07:35
10	What is that?	09:07:36
11	A. Well, I mean, I think it is probably	09:07:37
12	worth -- just because I give -- you know, I give	09:07:40
13	a formal definition in my -- in my declaration, I	09:07:43
14	think I'll read that first, then we can discuss	09:07:48
15	it.	09:07:50
16	I'm sorry, which version -- we decided	09:07:51
17	we're going to focus on one version of my	09:07:54
18	declaration.	09:07:56
19	Which one were we doing?	09:07:56
20	Q. Which would you prefer? The 604, that's	09:07:58
21	the first --	09:08:02
22	A. One of them is the first -- so let's see.	09:08:02

1	The 604 is the first.	09:08:05
2	Q. Okay.	09:08:06
3	A. That's near the front, so that one's okay.	09:08:06
4	Q. Yes.	09:08:09
5	MR. VERBONCOEUR: So for the	09:08:09
6	record, Dr. Creusere's looking at his 604	09:08:10
7	declaration for purposes of answering this	09:08:13
8	question.	09:08:16
9	A. Okay. So...	09:08:16
10	Okay. So in the claim construction	09:08:19
11	section around paragraph 62, I discuss spatial	09:08:22
12	motion vector prediction candidate.	09:08:27
13	And just -- just to read what I've	09:08:34
14	written, based on my review of the claims and	09:08:37
15	specifications of the '714 patent, it is my	09:08:39
16	opinion that a person of ordinary skill in the	09:08:42
17	art -- "POSITA" is what it actually says -- would	09:08:45
18	have understood a "spatial motion vector	09:08:48
19	prediction candidate" to mean a candidate motion	09:08:50
20	vector obtained from one or more	09:08:54
21	previously-encoded blocks.	09:08:58
22	So that is the basic definition I	09:08:59

1	give.	09:09:00
2	I can go on here, if you'd like.	09:09:01
3	Q. Okay. A spatial motion vector prediction	09:09:03
4	candidate is different from a temporal motion	09:09:07
5	vector prediction candidate?	09:09:10
6	A. Yes.	09:09:11
7	A spatial motion vector prediction	09:09:12
8	candidate is a prediction based on blocks in the	09:09:15
9	current frame -- "the current" being at the	09:09:18
10	current time.	09:09:21
11	A temporal motion vector prediction	09:09:22
12	candidate is a prediction candidate based on	09:09:26
13	blocks in a frame that is neighboring in time but	09:09:29
14	not the current frame.	09:09:32
15	So it could be a frame from a previous	09:09:33
16	time, or it could be a frame from a future time.	09:09:35
17	Q. Okay. And when we're decoding a current	09:09:38
18	block, obviously that block doesn't have a motion	09:09:41
19	vector yet.	09:09:43
20	I mean, the purpose of motion vector	09:09:44
21	predictions is to inform what motion vector it	09:09:45
22	will ultimately choose for the current block?	09:09:48

1 A. The current block is the block that we are 09:09:51
2 currently encoding; so it, indeed, does not have 09:09:53
3 a motion vector prediction candidate yet or a 09:09:57
4 motion vector of any sort. It has not been 09:10:01
5 expressed yet. 09:10:04

6 Q. And motion vector prediction candidates, 09:10:05
7 for purposes of the '714 patent, they come from 09:10:07
8 blocks other than the current block; and you know 09:10:10
9 whether it's in a different block in the current 09:10:13
10 frame or a different block in -- in a previous 09:10:16
11 frame based on whether it's spatial or temporal? 09:10:19

12 A. So again, motion vector prediction 09:10:25
13 candidates can come from previous frames or even 09:10:30
14 future frames, which -- which is actually 09:10:33
15 allowable because you can delay the processing of 09:10:36
16 the current frame -- and/or they can come from 09:10:39
17 the current frame; but if they come from the 09:10:44
18 current frame, they have to come from a block 09:10:47
19 that has already been encoded because -- and that 09:10:49
20 also actually has spatial -- that actually has 09:10:53
21 motion information associated with it; otherwise, 09:10:57
22 you can't use it for prediction. 09:10:59

1	Q. And for clarity, I meant in	09:11:01
2	decoding order --	09:11:01
3	A. Well --	09:11:01
4	Q. -- rather than display order.	09:11:04
5	A. Okay.	09:11:06
6	Q. But I understand your point, that with --	09:11:06
7	by "prediction," for example, you might have a	09:11:09
8	future display that's used for prediction.	09:11:12
9	What does it mean for a motion vector	09:11:17
10	to be a candidate motion vector?	09:11:20
11	A. In this context, in the context of the	09:11:28
12	'714 patent, what that means is that -- so what	09:11:30
13	the '714 patent is trying to accomplish in all of	09:11:36
14	its claims is it's trying to come up with a	09:11:38
15	prediction for the motion in the current block.	09:11:42
16	And that prediction is going to -- the	09:11:45
17	prediction process is going to select --	09:11:50
18	ultimately, for each block, once the prediction	09:11:56
19	process is completed, it will have created a list	09:11:59
20	of prediction -- vector prediction candidates	09:12:03
21	when the process is complete, and then what will	09:12:09
22	happen is the encoder will select from that list	09:12:11

1 one of the prediction motion vector candidates, 09:12:17
2 and that will become the predicted motion vector 09:12:21
3 for that block. 09:12:24

4 Q. Doctor, the answer you gave is in the 09:12:30
5 context of the perspective of the encoding or 09:12:32
6 decoding after a list has been created but before 09:12:38
7 the motion vector prediction list is created. 09:12:40

8 How does one know whether a motion 09:12:42
9 vector is a candidate or not? 09:12:45

10 MR. LIANG: Objection to form. 09:12:53

11 A. I think that depends on exactly the 09:12:56
12 procedure used. 09:12:59

13 Different procedures could be used to 09:13:00
14 come up with -- with your candidates, but the 09:13:03
15 point is that -- that there will be some number 09:13:06
16 of candidates, right, depending on -- no matter 09:13:10
17 what your procedure is, to select the 09:13:14
18 candidates -- there will be some number of 09:13:16
19 candidates. 09:13:18

20 You will have to evaluate those 09:13:19
21 candidates in some manner. When you're done with 09:13:22
22 the evaluation process, you'll have a final list 09:13:24

1 of prediction motion vector candidates; so there 09:13:28
2 will be some candidates that might be on the list 09:13:32
3 and then perhaps, you know, not end up on the 09:13:34
4 final list. 09:13:37

5 But when the process is complete, 09:13:38
6 you'll have a final list. Then you will select 09:13:40
7 from that list of candidates a specific motion 09:13:42
8 vector prediction for that block. 09:13:47

9 THE COURT REPORTER: I'm sorry, 09:13:47
10 can we take a break? I am having an issue. 09:13:47

11 MR. VERBONCOEUR: Yes, of course. 09:13:47

12 (Break taken from 9:14 a.m. to 09:13:47
13 9:20 a.m.) 09:20:54

14 Q. (BY MR. VERBONCOEUR) All right. Welcome 09:20:56
15 back, Doctor. 09:20:57

16 A. Thank you. 09:20:58

17 Q. Okay. So, Doctor, I'd like to direct your 09:20:58
18 attention to Figure 9 of the '714 patent. 09:21:01

19 Please let me know when you're there. 09:21:03

20 A. Yes, I'm looking at it now. 09:21:05

21 Q. Okay. And -- and we just talked about 09:21:07
22 spatial motion vector prediction candidates and 09:21:10

1	temporal motion vector prediction candidates, and	09:21:13
2	I -- I want to get your take on Figure 9.	09:21:15
3	So will you agree that the block	09:21:17
4	labeled "900" in Figure 9 is referring to a block	09:21:18
5	of pixels being encoded or decoded?	09:21:22
6	A. Yes.	09:21:26
7	That's -- that's -- that's the -- the	09:21:27
8	current block, the block being encoded and	09:21:27
9	decoded.	09:21:31
10	Q. And then there are a number of other	09:21:31
11	blocks, and -- and they have inside of them,	09:21:33
12	"A0," "A1," "B0," "B1," and "B2"?	09:21:36
13	A. Uh-huh, yes.	09:21:39
14	Q. And in Figure 9 of the '714 patent, those	09:21:39
15	blocks that have the different letter and number	09:21:42
16	combinations have the labels "901" through "905."	09:21:45
17	A. Yes, they do have those labels.	09:21:49
18	Q. And -- and the blocks 901 to 905, those	09:21:51
19	are neighboring blocks around block 900 in the	09:21:55
20	current frame.	09:22:00
21	Do you agree with that?	09:22:01
22	A. Yes. Those are reference blocks in the	09:22:02

1	current frame.	09:22:05
2	Q. And then the labels "A0," "A1," "B0,"	09:22:07
3	"B1," and "B2," those refer to motion vectors	09:22:12
4	that would be associated with those blocks 901	09:22:16
5	through 905.	09:22:20
6	A. I have to disagree with that.	09:22:31
7	If we go to the text describing this,	09:22:33
8	for example, column 16, line 8, it states, for	09:22:36
9	example, "if the spatial motion" vector	09:22:44
10	"prediction candidate is the block B1."	09:22:47
11	So I think that it's -- the -- you	09:22:49
12	know, they're -- they're referring to --	09:22:52
13	referring to the block B1.	09:22:54
14	So in the block -- yeah. So it's a	09:22:56
15	little bit indeterminant, right, because they're	09:23:05
16	saying the spatial motion vector prediction	09:23:06
17	candidate is the block B1, but -- but B1 -- a	09:23:09
18	block is not a spatial motion vector prediction	09:23:12
19	candidate, so a little iffy there.	09:23:15
20	Q. The way that you read the text at column	09:23:18
21	16, starting at line 8, referring to the spatial	09:23:21
22	motion vector prediction candidate, block B1, is	09:23:24

1 that "B1" there refers to both the location of a
2 block of pixels, but there's also some associated
3 motion vector that the block B1 that was
4 previously encoded or decoded might have.

5 A. That -- that is -- that -- that appears to
6 be implied -- implied, but I'm just pointing out
7 that there is a -- that it's not totally clear
8 from -- from the text here that -- but I do agree
9 that that appears to be the implication.

10 Q. In looking back at Figure 9 and thinking
11 about this from the knowledge of a person of
12 skill in the art, would you agree with me that a
13 person of skill in the art would understand in
14 Figure 9 that whether we call them 901 through
15 905 or A0 through B2, there are a number of
16 blocks that are previously encoded or decoded
17 before we get to current block 900?

18 A. I believe that a person of ordinary skill
19 in the art would look at this and they would
20 understand that -- that these A0, A1, B1, B0, B2
21 were all blocks that -- were all -- all
22 corresponded to blocks that could potentially

09:23:27

09:23:31

09:23:34

09:23:37

09:23:40

09:23:43

09:23:45

09:23:48

09:23:51

09:23:53

09:23:56

09:23:59

09:24:02

09:24:04

09:24:08

09:24:12

09:24:14

09:24:17

09:24:20

09:24:22

09:24:30

09:24:36

1	have motion vectors available for use in the	09:24:39
2	prediction process.	09:24:45
3	Q. A person of skill in the art knows what	09:24:46
4	raster scan order is?	09:24:48
5	A. A person of skill in the art definitely	09:24:51
6	knows what raster scan order is.	09:24:53
7	Q. And you'd agree that raster scan order is	09:24:54
8	a typical video coding process used in encoders	09:24:56
9	or decoders that starts at the -- the top left of	09:25:00
10	the frame and then proceeds to process blocks	09:25:02
11	across and then goes down a row and then	09:25:05
12	continues to process the blocks?	09:25:07
13	A. The raster scan is -- is the most commonly	09:25:09
14	used scanning order, certainly.	09:25:12
15	Q. Okay. And a person of skill in the art	09:25:14
16	looking at Figure 9 would understand that these	09:25:16
17	blocks that include the labels inside of them,	09:25:19
18	A0, A1, B0, B1, B2, could have been previously	09:25:24
19	decoded according to some raster scan order?	09:25:29
20	A. A person of ordinary skill in the -- skill	09:25:31
21	in the art would understand that that -- that	09:25:34
22	that is possible, that they -- that they could	09:25:34

1 have been previously encoded in the encoder and 09:25:39
2 obviously available, previously decoded in the 09:25:45
3 decoder. 09:25:48

4 However, for example, in a pure raster 09:25:49
5 scan, it is quite likely that block A0, which is 09:25:52
6 below and to the right of the current block, 09:25:56
7 might not be available; but, again, there are 09:25:58
8 many scanning patterns used and, hence, the -- 09:26:02
9 the -- the block layout given in Figure 9. 09:26:07

10 Q. All right. Are you familiar with the 09:26:12
11 H.265 standard? 09:26:15

12 A. I'm pretty familiar with it, yes. 09:26:16

13 Q. And are you familiar with the variable 09:26:18
14 block sizes in the H.265 standard? 09:26:21

15 A. Yes, I'm familiar with the variable block 09:26:22
16 standards [sic] in the H.265 standard. 09:26:26

17 Q. And are you also familiar with the process 09:26:26
18 of -- of decoding specified in the H.265 standard 09:26:28
19 that can sometimes take those variable block 09:26:34
20 sizes and lead to a situation where the block 09:26:36
21 labeled "A1" can be decoded before the block 09:26:39
22 labeled "900" would be decoded? 09:26:42

1	A. I -- certainly. I mean, there -- there --	09:26:47
2	there are -- there are -- there are -- with the	09:26:50
3	quadtree decomposition that's used in H.265,	09:26:55
4	there are many permutations as to which blocks	09:26:58
5	have already -- would have already been	09:27:02
6	encoded -- sorry -- would have already been	09:27:05
7	encoded or decoded in -- in the scanning order.	09:27:08
8	So there are a lot of permutations.	09:27:10
9	Q. I think -- I think we agree on this; but,	09:27:12
10	you know, at a very high level, the problem that	09:27:16
11	a person of skill in the art would understand the	09:27:18
12	'714 patent to address is that we -- we don't	09:27:20
13	know what vector we should use for block 900 if	09:27:24
14	we're an encoder or a decoder.	09:27:27
15	A. I don't think that's exact -- entirely	09:27:32
16	accurate because we could always simply encode	09:27:34
17	block 900 with its own unique motion vector.	09:27:41
18	The point -- the point of the '714	09:27:45
19	patent is, rather than spend the -- spend the	09:27:49
20	bits, right, expend the bits to encode a motion	09:27:52
21	vector for block 900, it might be more efficient	09:27:57
22	to, instead, predict the motion for block 900.	09:28:01

1	And the '714 patent is focused on	09:28:07
2	coming up with a good prediction for the block	09:28:11
3	900.	09:28:15
4	Q. That's fair, and that's a more precise way	09:28:15
5	of putting it.	09:28:19
6	So -- so let's look at this from the	09:28:19
7	perspective of the decoder.	09:28:19
8	The decoder knows that block 900 has	09:28:20
9	been coded with some form of motion-compensated	09:28:23
10	prediction technique; but I think you would agree	09:28:27
11	with me that when the decoder reaches block 900,	09:28:29
12	the decoder doesn't know what motion vector to	09:28:33
13	apply at that point.	09:28:35
14	A. The decoder does not know what motion	09:28:36
15	vector to apply at the start of the process when	09:28:40
16	it reaches 900.	09:28:43
17	Now, again, the purpose of the '714	09:28:44
18	patent is to provide the decoder with the	09:28:47
19	information necessary to come up with a	09:28:52
20	prediction of the motion for the -- for block	09:28:56
21	900.	09:29:01
22	Q. And in the '714 patent, the information	09:29:01

1	necessary to come up with a motion vector	09:29:04
2	prediction for block 900 comes from the	09:29:07
3	neighboring blocks shown in Figure 9?	09:29:10
4	A. In the '714 patent, the neighboring blocks	09:29:17
5	in Figure 9 can contribute potentially motion --	09:29:20
6	the motion information need -- that the decoder	09:29:26
7	needs to -- to come up with a prediction.	09:29:29
8	I say "potentially" because it is	09:29:32
9	possible that motion information may not be	09:29:35
10	available for some of those blocks. Some of	09:29:40
11	those blocks could be intra-coded or something	09:29:42
12	like that.	09:29:44
13	So -- so to the extent that those	09:29:45
14	blocks have motion information available, then	09:29:48
15	they -- then the information in those blocks	09:29:52
16	could be used by the decoder and the -- the	09:29:54
17	encoder to encode and then -- then commensurately	09:29:57
18	the decoder based on the encoding to decode the	09:30:01
19	predicted motion vector.	09:30:05
20	Q. Let's go back to Claim 23, please. I'd	09:30:06
21	like to get your take on one of the limitations.	09:30:10
22	Let me know when you're there.	09:30:18

1	A. I am at Claim 23.	09:30:21
2	Q. So we're looking at Claim 23 of the '714	09:30:23
3	patent, and I'd like to ask you about the	09:30:27
4	"determine a subset" limitation.	09:30:30
5	Do you see that?	09:30:33
6	A. "Determine a subset of spatial motion	09:30:33
7	vector prediction candidates based on the	09:30:37
8	location of the block associated with the first	09:30:38
9	spatial motion vector prediction candidate," that	09:30:41
10	one?	09:30:43
11	Q. That's right. That's the limitation I'm	09:30:43
12	looking at in Claim 23.	09:30:45
13	And you -- you offer -- well, I --	09:30:47
14	actually, I should be precise.	09:30:49
15	In your declaration, you say that you	09:30:51
16	(as read) applied the interpretation of the block	09:30:53
17	associated with the first spatial motion vector	09:30:56
18	prediction candidate that you believe the patent	09:31:00
19	examiner applies in prosecution of an earlier	09:31:02
20	family member of the '714 patent.	09:31:06
21	A. That's correct.	09:31:09
22	I applied the -- I applied the	09:31:10

1 construction that -- that the block, which is,
2 you know, antecedent to the block of pixels in
3 the first claim limitation, that that block in
4 claim limitation -- I guess it would be 23B in
5 our -- in our jargon which we're talking about
6 here, is the current block of pixels that's --
7 that's being encoded.

8 And I base that on the patent
9 examiner's discussion of the '823 patent, which
10 is a parent patent to the '714 patent.

11 And in that discussion, the patent
12 owner excite -- excited -- the patent owner cited
13 Tai, which was a -- a paper which I actually have
14 a copy of here.

15 And specifically, the patent owner
16 cited -- so if we -- if we take a look at Tai,
17 the -- the section that the patent owner
18 discussed begins on Page 189 of Tai, bottom of
19 column number two, where the -- Tai very clearly
20 says that -- that you're finding a motion vector
21 for a block, X with an arrow over it, that motion
22 vector being labeled MV arrow -- with an arrow

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09:32:06

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09:32:23

1	over it, superscript I; and that's a function	09:32:26
2	of -- of the block and T.	09:32:30
3	And the patent owner referred, in	09:32:32
4	particular, to -- patent owner, I'm sorry -- the	09:32:34
5	patent examiner referred, in particular, to	09:32:37
6	equation two.	09:32:40
7	Equation two defines a subset of	09:32:41
8	motion vectors X, CS superscript I, a function of	09:32:45
9	X, which is a function of -- of X with a -- with	09:32:50
10	an arrow over the top.	09:32:52
11	That subset is searched in equation	09:32:55
12	number one for a given pass, pass I -- the	09:32:59
13	superscript "I" denotes the pass -- to find the	09:33:03
14	current -- to find the motion vector	09:33:06
15	corresponding to the current block.	09:33:08
16	So that's the selection process, if	09:33:10
17	you will.	09:33:11
18	But the important thing that the	09:33:11
19	patent -- patent examiner noted was that the --	09:33:15
20	that the subset, CS superscript I, was vector --	09:33:17
21	included only vectors V, where V was equal to	09:33:22
22	something defined as PMV with an arrow over it,	09:33:27

1	I, of X.	09:33:31
2	Now, PMV with an arrow over it of I --	09:33:32
3	and, again, the I is -- denotes the pass. That	09:33:37
4	was determined by not doing a full search of	09:33:40
5	blocks around the current -- the current block.	09:33:43
6	So if you see Figure 2, there's a --	09:33:46
7	this gives the geometric relationship between the	09:33:51
8	current block and the three blocks on all sides	09:33:54
9	of it.	09:33:57
10	And the idea here was that you only	09:33:57
11	have to check one of the -- when you -- if you	09:33:59
12	do -- if you check three blocks, one of them will	09:34:03
13	have the same motion as the current block.	09:34:06
14	So you can see in Figure 2 the object	09:34:08
15	boundary. Only one of those will be in the	09:34:11
16	current object.	09:34:13
17	So the innovation here was that -- was	09:34:13
18	that you could use a pattern not looking at all	09:34:15
19	the blocks around it, but looking at a subset of	09:34:17
20	those blocks, which is shown in Figure 3.	09:34:20
21	So for the first pass, the first pass	09:34:22
22	is -- these passes are multi-resolutional. They	09:34:24

1 start with 32-by-32 pixel blocks, and then they 09:34:27
2 go down to 16-by-16, 8-by-8, 4-by-4. 09:34:31

3 In the first pass, you use the three 09:34:35
4 patterns shown in Figure 3, 1, 2, and 3, in order 09:34:37
5 to figure out exactly for that pass what the 09:34:41
6 rough motion vector is; and then you go through 09:34:47
7 subsequent passes in our finding. 09:34:50

8 The bottom line in all this, though, 09:34:51
9 is the patent examiner very clearly cited the 09:34:54
10 fact that -- in terms of equation two, that this 09:34:58
11 was a subset and that -- a subset of the 09:35:00
12 potential motion vector prediction candidates, if 09:35:08
13 you will, in the jargon of the '714 patent, and 09:35:11
14 that all candidates were not being checked in 09:35:15
15 this process, and then the selection in equation 09:35:18
16 one was made from the subset. 09:35:21

17 MR. VERBONCOEUR: I'd like to 09:35:23
18 introduce as Exhibit 2 the 604 declaration, 09:35:24
19 please. 09:35:26

20 (Whereupon Exhibit 2 was marked 09:35:26
21 for identification.) 09:35:26

22 Q. (BY MR. VERBONCOEUR) All right. Doctor, 09:35:49

1	you've just been handed what's been marked as	09:35:49
2	Exhibit 2.	09:35:52
3	Will you please let me know if you	09:35:53
4	agree that's your 604 declaration?	09:35:55
5	A. It certainly appears to be.	09:36:10
6	Q. And, Doctor, we previously agreed that we	09:36:12
7	will refer to your 604 declaration because the	09:36:14
8	opinions you express in the 604 and 605	09:36:17
9	declarations are substantially similar.	09:36:21
10	A. We did agree to that, yes.	09:36:22
11	Q. I'd like you to go to paragraph 66 of your	09:36:23
12	declaration, please.	09:36:27
13	A. Yes, I'm there.	09:36:28
14	Q. Okay. This section is about what you call	09:36:29
15	"the block" term, and it's within a larger	09:36:32
16	section titled "Claim Construction."	09:36:36
17	A. That is correct.	09:36:41
18	Q. The only paragraph in "the block" section	09:36:42
19	is paragraph 66.	09:36:45
20	A. That is correct.	09:36:49
21	Q. And you cite to -- I see two distinct	09:36:49
22	citations in this entire section on "the block,"	09:36:55

1 one of which is a nonfinal office action, and the 09:36:57
2 other is the applicant's reply to that office 09:37:01
3 action. 09:37:05

4 A. That is correct, yes. 09:37:14

5 Q. And I took from this to -- to mean that 09:37:15
6 the support you find for your interpretation of 09:37:18
7 "the block" is focused on the examiner's 09:37:20
8 interpretation under your view of -- of what the 09:37:25
9 examiner did. 09:37:27

10 A. I mention also at other points in this -- 09:37:31
11 in this -- in my discussion that there is, in 09:37:35
12 addition, the -- the antecedent basis, the fact 09:37:38
13 that the only other reference to a block in the 09:37:41
14 patent claim is in the -- in -- in part A of the 09:37:45
15 claim, where the block referred to is the block 09:37:49
16 of pixels. 09:37:50

17 Q. And when you refer to "antecedent basis," 09:37:52
18 are you referring to a legal principle 09:37:57
19 communicated to you by counsel? 09:37:59

20 A. That's my understanding. 09:38:00

21 I mean, it's -- it's the fact that -- 09:38:01
22 you know, that -- my understanding of that -- of 09:38:04

1 that principle is that -- is that something is
2 referred to earlier as -- in a claim limitation,
3 is -- and -- is -- is -- is -- is taken or can be
4 taken -- I mean, it's logically taken that when
5 you use that same term later on, you're referring
6 to that thing that was defined earlier in a claim
7 limitation.

09:38:05

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09:38:26

8 That's my understanding of the
9 process.

09:38:26

09:38:26

10 Q. And so the reason you apply the
11 interpretation you did of "the block" associated
12 with the first spatial motion vector prediction
13 candidate is, one, what you believe the examiner
14 did in the prosecution of the earlier family
15 member, and, two, your understanding of the
16 antecedent basis?

09:38:26

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17 A. Well, and, three, the fact that, as a
18 person of ordinary skill in the art, this is how
19 I would have -- would have understood this.

09:38:42

09:38:44

09:38:47

20 So that's implicit in -- in my entire
21 opinion.

09:38:50

09:38:52

22 Q. Okay. And -- and let's talk about

09:38:53

1	antecedent basis.	09:38:55
2	Do you have an understanding of that	09:38:56
3	principle, antecedent basis, in patent law?	09:38:59
4	A. Again, as I -- as I've said, my -- my	09:39:03
5	understanding -- and you're welcome to correct me	09:39:06
6	if I'm wrong. I'm not a lawyer. I don't -- I	09:39:08
7	don't claim to be a lawyer.	09:39:09
8	My understanding is that if some term	09:39:10
9	is defined in a claim, in the same claim earlier	09:39:14
10	on in that claim, and then the term is -- is --	09:39:18
11	is put forth again, that term is put forth again	09:39:23
12	in that claim, that one would assume that when it	09:39:27
13	was mentioned the second time, you're referring	09:39:33
14	to the same thing that was defined in the first	09:39:35
15	one. Now -- the first time.	09:39:37
16	Now, if that's incorrect, I apologize,	09:39:38
17	but that's my understanding of the principle.	09:39:40
18	Q. It would be inappropriate for me to	09:39:42
19	instruct you on the principle of antecedent	09:39:44
20	basis.	09:39:44
21	But were you aware that antecedent	09:39:46
22	basis can also be implied?	09:39:50

1	A. I mean, I -- I think anything can be	09:39:52
2	implied, but I -- I -- I do not claim to know all	09:39:54
3	the details of -- of antecedent basis.	09:39:58
4	So if you want somebody to testify on	09:40:00
5	that, you'll need to find a lawyer, I suspect.	09:40:02
6	Q. Okay. And let's talk about what the	09:40:05
7	examiner did in the earlier prosecution.	09:40:08
8	MR. VERBONCOEUR: So I'd like to	09:40:10
9	introduce that as Exhibit 3.	09:40:11
10	(Whereupon Exhibit Number 3 was	09:40:16
11	marked for identification.)	09:40:16
12	Q. (BY MR. VERBONCOEUR) So, Doctor, going	09:40:41
13	back to paragraph 66 of your declaration --	09:40:52
14	A. Okay. Yes, paragraph 66.	09:40:57
15	Q. -- when you cite to the nonfinal office	09:41:12
16	action, you cite to one page in particular,	09:41:14
17	Page 168.	09:41:17
18	A. That's what -- that's what -- yeah, that's	09:41:19
19	what it says, uh-huh.	09:41:21
20	Q. What's been marked as Exhibit 3 is	09:41:21
21	Page 168 of the nonfinal office action.	09:41:24
22	Can you please take a look at	09:41:29

1	Exhibit 3 and let me know whether you recognize	09:41:29
2	it?	09:41:32
3	A. Yeah. It looks like the same as the copy	09:41:38
4	of 168 I have in my binder.	09:41:40
5	Q. Okay. Great.	09:41:42
6	And this is part of the office action	09:41:43
7	that refers to the determining a subset	09:41:47
8	limitation.	09:41:50
9	Do you see that?	09:41:50
10	A. I -- I see that.	09:41:51
11	Q. And there's the CS equation of Tai that	09:41:52
12	the examiner cites; and I believe you just	09:41:56
13	mentioned that equation, too.	09:41:58
14	A. I did mention that equation, yes.	09:41:59
15	Q. And then the examiner continues,	09:42:02
16	"determining a subset of spatial motion vector	09:42:04
17	predictions based on the location of the block	09:42:09
18	associated with the first spatial motion vector	09:42:10
19	prediction candidate, i.e." -- in other words,	09:42:14
20	that is -- "by selecting one of the PMV," with	09:42:15
21	the arrow on top "from MVs of neighboring blocks,	09:42:18
22	a subset of CSi" for X and t "is defined for a	09:42:22

1	different linear combination of that PMV and U,"	09:42:26
2	with an arrow over it, USi.	09:42:30
3	Do you see that?	09:42:33
4	A. I do, yes.	09:42:34
5	Q. Okay. And so one way of interpreting --	09:42:35
6	actually, I -- I'm not -- well, I -- I won't	09:42:37
7	profess to agree with this, but it seems like	09:42:39
8	you're interpreting the examiner's comments here	09:42:42
9	to -- to mean that "associated with the first	09:42:45
10	spatial motion vector prediction candidate" is	09:42:48
11	referring to the block being encoded or decoded.	09:42:50
12	A. I think it's pretty clear that it's	09:42:55
13	referring to the block being encoded and decoded,	09:42:57
14	yes.	09:42:59
15	Q. Okay. Now, what the examiner says on	09:43:00
16	Page 168 of Exhibit 3 is, "by selecting one of	09:43:02
17	the PMVs from MVs of neighboring blocks."	09:43:08
18	How in Tai are the PMVs selected?	09:43:11
19	A. So I'm glad you asked.	09:43:14
20	If we look at Tai -- so if we -- first	09:43:17
21	of all, the -- the CS -- okay. So the final	09:43:21
22	selection, the final selection of the predicted	09:43:27

1	motion is given by equation one, which is not --	09:43:30
2	not -- which is shown in -- also on Page 1 -- 168	09:43:32
3	further down, so that's the final selection	09:43:37
4	process.	09:43:40
5	But the final selection is made from	09:43:40
6	the set CS superscript i.	09:43:42
7	And, again, the "i" -- so this is a	09:43:45
8	multipass process. So what it's going to do is	09:43:48
9	it's going to do three passes the first time with	09:43:51
10	32-by-32 blocks, going through the entire image,	09:43:53
11	three passes, 32-by-32 blocks, and each pass is	09:43:56
12	labeled "i."	09:44:01
13	So pass 1, pass 2 -- i equals 1, i	09:44:02
14	equals 2, i equals 3, and so on.	09:44:05
15	So the first time -- let's just take	09:44:07
16	this through -- when i is equal to one, it's	09:44:09
17	going to go through this process. It's going	09:44:11
18	to -- it's going to create a set, CS superscript	09:44:13
19	1, for the current block X bar.	09:44:16
20	And the vectors in that set will	09:44:19
21	include -- so -- so the V with an arrow over it,	09:44:22
22	that's going to be a potential motion vector.	09:44:25

1	The vectors in that set will be selected from	09:44:27
2	what would -- the vector will be selected from V	09:44:32
3	with an arrow over it and then PMV with an arrow	09:44:35
4	over it i -- in this case, i is equal to 1 -- X	09:44:39
5	plus U.	09:44:42
6	Okay. We don't need to worry about	09:44:43
7	the U. U is an update vector. It's not really	09:44:44
8	germane to this case.	09:44:47
9	The important thing here is the	09:44:49
10	selection of PMV.	09:44:51
11	Now, if you read the paragraphs below	09:44:53
12	that, what it says is that -- is that the PMV --	09:44:56
13	a single PMVi will be selected based on the	09:44:59
14	search pattern.	09:45:03
15	So you're going to look at these	09:45:04
16	three -- so for pass one, if we go to Figure 3,	09:45:05
17	we'll look at the three candidates that you see	09:45:08
18	here, sort of shaded around the current block,	09:45:11
19	the current block being in the center, and we	09:45:15
20	will select the best choice candidate for that.	09:45:17
21	And then you'll add this -- this	09:45:21
22	up- -- this update will allow you to have some	09:45:23

1	variations around that.	09:45:25
2	So you'll do the selection from	09:45:26
3	those -- select one from those three for the	09:45:28
4	first time.	09:45:31
5	Then the next time through, i is going	09:45:31
6	to equal 2. And you're still going to be at	09:45:34
7	32-by-32 block size, but now you're going to use	09:45:38
8	pattern number 2 and you will select the best one	09:45:41
9	from there.	09:45:43
10	The idea here is that you will do this	09:45:44
11	iteratively; and as you go through this process,	09:45:49
12	you should end up with a better, more and more	09:45:51
13	refined motion vector for the current block.	09:45:53
14	So it's all based on -- on finding	09:45:56
15	progressively better motion estimates for the	09:46:00
16	current block.	09:46:03
17	Q. So for each value of i, and i could have a	09:46:04
18	range of 1 to 12, there is going to be, as	09:46:07
19	described in Tai, three motion vectors that are	09:46:11
20	considered here; and then each of those will have	09:46:14
21	associated updated vector sets?	09:46:17
22	A. The -- so first there's going to be a	09:46:21

1	selection.	09:46:25
2	So to figure out what -- to figure out	09:46:26
3	what choice of -- for PMV, arrow over it, i has	09:46:29
4	made, you're going to consider a pattern of three	09:46:34
5	vectors around the current -- three motion --	09:46:37
6	motion -- potential motion vectors around the	09:46:39
7	current block.	09:46:42
8	And then, of course, you -- then your	09:46:45
9	set will also -- it will be a set because it will	09:46:47
10	include the plus vector U, which is these sort of	09:46:50
11	little variational updates around that, which	09:46:53
12	actually change as you're going through the --	09:46:56
13	the pass process, but that's -- that's, again,	09:46:58
14	neither here nor there.	09:47:00
15	So first time -- first time through	09:47:02
16	when i is equal to 1, you're going to use the	09:47:04
17	vector set that you see in -- labeled "1" in	09:47:06
18	Figure 3.	09:47:09
19	Second time through, you're going to	09:47:10
20	lose -- use the set labeled "2."	09:47:12
21	Third time through you're going to	09:47:14
22	lose the set -- use the set labeled "3."	09:47:16

1 Q. Right.

09:47:17

2 And in each case, a motion vector V in
3 the candidate vector set has a PMV that's taken
4 from the neighboring block and an update vector?

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5 A. The -- the PMV -- yeah. The -- well,
6 "taken from"? I'm not sure I'd say that, say --
7 say "taken from."

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8 But the PMV is going to be -- is going
9 to be -- you know, the -- the candidate, if you
10 will, will be one of those three -- the -- the
11 motion vectors from one of those three blocks
12 that surround the current block.

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13 Q. All right. And in each case, the
14 candidate vector set is going to be one of the
15 vectors from a neighboring block that surrounds
16 the current block and an update vector?

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09:48:02

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09:48:07

17 A. Well, the candidate vector set -- the
18 candidate vector set is going to -- is going to
19 be those -- so the candidate vector set will be
20 those three -- the -- the vectors corresponding
21 to those three blocks surrounding the current
22 block, right? That's -- that's -- that's our

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1	vector set.	09:48:33
2	Then the candidate vector will be	09:48:34
3	selected from that, plus the additional blocks	09:48:36
4	from the -- the additional variations caused by	09:48:40
5	the addition of the plus U.	09:48:43
6	Q. Right.	09:48:45
7	So when you refer to the candidate set	09:48:45
8	that includes the three motion vectors that come	09:48:48
9	from neighboring blocks, you're referring to "CS"	09:48:51
10	for "candidate set"?	09:48:53
11	A. "CS" is broader.	09:48:58
12	So -- so we have to distinguish	09:49:00
13	between the candidate set or subset or whatever	09:49:03
14	with respect to the '714 patent and what the --	09:49:08
15	what the -- what the candidate set or subset or	09:49:12
16	whatever is with respect to -- to this -- to the	09:49:15
17	Tai paper.	09:49:19
18	I mean, the patent examiner was not	09:49:20
19	considering the U in -- you know, the -- the U --	09:49:24
20	the -- the -- the U vector portion of this. He	09:49:29
21	did not feel that that was -- that was what	09:49:30
22	was -- was making it -- making the '833 patent	09:49:34

1 unpatentable. He was -- he was focused on the --
2 the -- the PMV part of it.

3 So -- so in terms of the Tai patent,
4 CS superscript I is -- is, indeed, a set. And,
5 in fact, Tai -- Tai -- you know, he calls it a
6 candidate set, candidate vector set, right?

7 But that's not the equivalent of --
8 that's not what the patent examiner was focused
9 on, and that's not the equivalent set or subset
10 with respect to the '714 patent.

11 With respect to the '714 patent,
12 the -- the subset, if you will -- this would be
13 the subset, this -- with respect to the '714
14 patent, the patent examiner's interpretation was
15 that -- that the eight vectors surrounding the
16 current vector were the set and that the subset
17 that was not the entire vector was the -- was the
18 three vectors that you were actually testing for
19 equation two to -- to -- to -- in equation two to
20 figure out what PMV with an arrow over it
21 superscript i actually is.

22 Q. So, I mean, just sticking to the facts

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1	here, the paper Tai calls CS the candidate vector	09:51:02
2	set.	09:51:08
3	I think we agree with that?	09:51:08
4	A. I believe I just said that, yes.	09:51:09
5	Q. Okay. And CS is not what the examiner is	09:51:11
6	pointing to as a subset.	09:51:15
7	I think we agree with that, too?	09:51:17
8	A. The examiner is pointing to a portion	09:51:19
9	of CS -- of -- of the creation of CS. He's	09:51:21
10	pointing to the process of -- within the creation	09:51:24
11	of CS, he's pointing to the process of how PMV	09:51:27
12	with an arrow over it superscript i is selected.	09:51:33
13	Q. Right.	09:51:37
14	And -- and the examiner makes that	09:51:38
15	clear on Exhibit 3 where the examiner says, "that	09:51:39
16	is, by selecting one of the PMVs from MVs of	09:51:44
17	neighboring blocks, a subset of CS is defined."	09:51:49
18	Do you see that?	09:51:52
19	A. I do see that, and that's exactly what I	09:51:53
20	was saying.	09:51:56
21	I was saying the patent -- the patent	09:51:57
22	examiner says that around the current block, you	09:51:58

1	have eight other blocks that you could use. That	09:52:01
2	would be the -- the entire set, but Tai selects a	09:52:03
3	subset. He selects three of those blocks to	09:52:07
4	test.	09:52:10
5	Q. You would think that if the examiner had	09:52:10
6	that interpretation, the examiner would have said	09:52:13
7	something like, "by selecting three out of eight	09:52:15
8	motion vectors from neighboring blocks, CS is	09:52:19
9	defined."	09:52:22
10	But the examiner, instead, said, "by	09:52:23
11	selecting one of the PMVs from" the -- "from MVs	09:52:26
12	of neighboring blocks, a CS is defined."	09:52:28
13	A. Well, CS does select -- I said CS selects	09:52:30
14	one, but it selects one of three.	09:52:33
15	I agree the examiner's -- the	09:52:35
16	examiner's phraseology is -- is not perfect; but	09:52:38
17	I'm -- I'm quite certain that -- that his	09:52:40
18	thinking is the same as mine because, yes, I've	09:52:43
19	already said that -- that in the selection	09:52:46
20	process, in creating CS superscript i, you select	09:52:48
21	V, such that that's equal to PMV, arrow above it,	09:52:53
22	superscript i, plus the U.	09:53:00

1 And when you select from these three 09:53:01
2 blocks, right, from these three surrounding 09:53:04
3 blocks -- not from the eight blocks in the entire 09:53:06
4 set, but from the three in the subset -- when you 09:53:09
5 select one of those three, right, which you say 09:53:11
6 you're selecting one of them, that is the 09:53:14
7 selection process. 09:53:16

8 And then, like I say, the addition of 09:53:16
9 the U really isn't germane to the -- to the -- 09:53:18
10 his analysis. 09:53:21

11 Q. So in Exhibit 3, when the examiner is -- 09:53:23
12 is identifying a subset of CS, the -- the 09:53:27
13 examiner notes that that subset is defined by 09:53:30
14 selecting one of the PMV from MVs of neighboring 09:53:34
15 blocks. 09:53:39

16 A. Just so -- just so -- just so I can read 09:53:44
17 it, which -- where are you on the page when 09:53:46
18 you're reading that? 09:53:48

19 Q. Yeah. I was paraphrasing the "that is" 09:53:49
20 statement following, "based on the location of 09:53:53
21 the block associated with the first spatial 09:53:55
22 motion vector prediction candidate." 09:53:57

1	A. Okay.	09:53:58
2	Q. Let -- I -- let me reask that.	09:53:58
3	So -- so when the examiner is looking	09:54:00
4	at "based on the location of the block associated	09:54:01
5	with the first spatial motion vector prediction	09:54:04
6	candidate," the examiner says that is -- and I'm	09:54:06
7	skipping ahead now -- "a subset of CS is defined	09:54:10
8	by selecting one of the PMV from MVs of	09:54:13
9	neighboring blocks."	09:54:17
10	A. Yeah, but -- and I've already said, right,	09:54:20
11	you're selecting one; but the point is, you're	09:54:23
12	not selecting one from all eight neighbors.	09:54:25
13	You're selecting one from a subset of three	09:54:28
14	neighbors.	09:54:30
15	Q. And I don't want to interrupt you, so	09:54:41
16	please let me know if -- if you're --	09:54:43
17	A. Sure.	09:54:43
18	Q. -- not done with your answer.	09:54:45
19	A. Sure.	09:54:46
20	Q. Are you -- are you done with your answer?	09:54:47
21	A. Yes. I think I'm done with my answer for	09:54:49
22	the time being.	09:54:51

1	Q. Okay. Thank you. Sorry. I didn't want	09:54:52
2	to talk over you.	09:54:53
3	And you agree, looking at Figure 3 of	09:54:54
4	Tai --	09:54:59
5	MR. VERBONCOEUR: And, actually,	09:55:00
6	let's just, for the record, go ahead and	09:55:01
7	introduce this as an exhibit, if you could please	09:55:03
8	mark this as Exhibit 4.	09:55:05
9	(Whereupon Exhibit Number 4 was	09:55:06
10	marked for identification.)	09:55:24
11	Q. (BY MR. VERBONCOEUR) All right. Doctor,	09:55:24
12	you've been handed what's been marked as	09:55:24
13	Exhibit 4.	09:55:27
14	Do you agree this is the Tai paper	09:55:28
15	that you've been referring to as "Tai"?	09:55:29
16	A. Yes, and it's in full color. It's very	09:55:31
17	nice.	09:55:34
18	Q. Yes, you're welcome.	09:55:35
19	I'd like to direct your attention to	09:55:37
20	Figure 3 of Tai.	09:55:39
21	A. Okay.	09:55:42
22	Q. And we were just discussing the examiner's	09:55:42

1 nonfinal office action here when the examiner is 09:55:46
2 referring to selecting one of the PMVs from MVs 09:55:49
3 of neighboring blocks to define as a subset of 09:55:53
4 CS. 09:55:56

5 And you made the point that when Tai 09:55:56
6 is picking one of these PMVs, that's actually 09:55:58
7 not -- it's not possible in Tai for a given pass 09:56:01
8 to look at all eight surrounding blocks. It's 09:56:04
9 just looking at three of those eight surrounding 09:56:07
10 blocks, right? 09:56:11

11 A. I would disagree that it's -- that -- with 09:56:11
12 your statement that it's -- it's not possible. 09:56:12

13 It is most definitely possible, and 09:56:14
14 Tai acknowledges that -- that one could do that, 09:56:16
15 but -- but Tai is -- is pointing to the fact 09:56:20
16 that -- that one doesn't need to do that. 09:56:22

17 One can do it by looking at three 09:56:25
18 blocks; and, in fact, Tai cites -- citation 09:56:28
19 number two in Tai cites another paper, which I 09:56:30
20 have -- I don't claim to have read, where 09:56:35
21 apparently the idea was originally developed. 09:56:37

22 Q. Yeah, and I apologize for the imprecise 09:56:40

1	question.	09:56:43
2	But my question is: If one takes	09:56:43
3	Tai's approach --	09:56:45
4	A. Uh-huh.	09:56:45
5	Q. -- rather than looking to all eight of the	09:56:46
6	surrounding blocks, one will consider three of	09:56:48
7	them, and then they will pick one of the PMVs	09:56:50
8	from those MVs of those three blocks as opposed	09:56:53
9	to examining all eight.	09:56:58
10	A. I -- yeah. I believe -- at least I	09:57:00
11	believe I already said that -- that that's what	09:57:02
12	Tai does.	09:57:04
13	Tai does -- in each pass Tai does not	09:57:05
14	look at all eight surrounding blocks. It only --	09:57:08
15	it -- they show in Figure 2 -- you know, where	09:57:10
16	they show the current block, that -- that's the	09:57:13
17	justification for only needing to be able to look	09:57:15
18	at three blocks to figure out which block is in	09:57:17
19	the same object as the current block.	09:57:21
20	Q. And if we look at Figure 2, you agree that	09:57:24
21	what's labeled as "Current Block" in Figure 2 of	09:57:26
22	Tai, that one doesn't have a PMV at the point at	09:57:29

1	which the processing is done; rather, N1, N2, and	09:57:32
2	N3 are considered for their PMVs?	09:57:37
3	A. Well, I think -- I think I have to -- I	09:57:39
4	have to sort of disagree with that. It depends.	09:57:40
5	Remember, Tai is a multi-pass process.	09:57:45
6	It's going to be iteratively improving the motion	09:57:48
7	vector estimate on a smaller and smaller scale.	09:57:52
8	So the way you phrased it, that it	09:57:54
9	doesn't have a motion vector, that's only true on	09:57:57
10	pass one.	09:57:59
11	On -- after pass one, it's going to,	09:58:01
12	as it is -- and especially as it gets down to	09:58:04
13	smaller and smaller block sizes, it's going to be	09:58:06
14	taking the motion vectors that it -- that it --	09:58:08
15	that it -- its motion vector estimates from	09:58:12
16	previous passes, and it's going to be refining	09:58:13
17	them.	09:58:15
18	Q. All right. So let's put it this way:	09:58:15
19	Looking at Figure 2 in the current block with N1	09:58:18
20	and 2 and 3, PMV with the bar on top of it,	09:58:21
21	superscript i, is chosen from the motion vectors	09:58:26
22	of one of the neighboring blocks -- that is, N1,	09:58:29

1	N2, N3. It's -- it's obviously not chosen from	09:58:31
2	the current block.	09:58:33
3	A. Are you referring to equation one?	09:58:35
4	Q. Referring to equation two and --	09:58:37
5	A. Ahh.	09:58:37
6	Q. -- if it's helpful, I'm -- I'm reading	09:58:40
7	directly from Tai, where it says, "where PMV,	09:58:42
8	with arrow, superscript i, is the PMV of block X	09:58:45
9	and is chosen from the MVs of the neighboring	09:58:49
10	blocks."	09:58:52
11	A. No. Yeah, that -- that's correct.	09:58:52
12	And -- and, again, I said that	09:58:53
13	multiple times, that -- that PMV, with the arrow	09:58:55
14	over it, i in CS superscript i in the formula --	09:58:59
15	formula two is chosen by looking at a set of	09:59:04
16	three neighboring blocks -- again, as given in	09:59:10
17	the scan pattern of Figure 3, depending upon the	09:59:13
18	pass.	09:59:13
19	And -- and you'll select the best of	09:59:16
20	those for -- for PMV, arrow over it, superscript	09:59:20
21	i.	09:59:24
22	Q. Figure 3 of Tai defines various location	09:59:24

1	combinations of three neighboring blocks that Tai	09:59:31
2	will consider in each of its 12 passes.	09:59:36
3	A. I definitely agree with that, yes.	09:59:41
4	Q. All right. Let's go back to what's been	09:59:43
5	marked as Exhibit 1, please, which I believe is	09:59:55
6	the '714 patent.	10:00:02
7	A. (Complying.)	10:00:04
8	Q. All right. And could you please look at	10:00:05
9	Claim 23, please.	10:00:15
10	A. (Complying.) I'm looking at Claim 23.	10:00:16
11	Q. Okay. And -- and the -- the full	10:00:26
12	limitation is, "determine a subset of spatial	10:00:32
13	motion vector prediction candidates based on the	10:00:35
14	location of the block associated with the first	10:00:37
15	spatial motion vector prediction candidate."	10:00:40
16	Are you -- do you see that?	10:00:42
17	A. I do.	10:00:43
18	Q. There is the term "associated with the	10:00:43
19	first spatial motion vector prediction	10:00:48
20	candidate."	10:00:50
21	In your view, does that phrase modify	10:00:51
22	the block or does it modify a subset?	10:00:53

1	location, too, right?	10:02:34
2	So there has to be some sort of -- of	10:02:35
3	spatial relationship between the block and the	10:02:39
4	first spatial motion vector prediction candidate.	10:02:44
5	That is how I believe a person of ordinary skill	10:02:47
6	in the art would interpret that.	10:02:50
7	Q. The interpretation you applied to the	10:02:51
8	block associated with the first spatial motion	10:02:55
9	vector prediction candidate is that it's	10:02:57
10	referring to the current block being encoded or	10:02:59
11	decoded; for example, block 900 in Figure 9 of	10:03:04
12	the '714 patent?	10:03:09
13	A. I have interpreted it as being related to	10:03:10
14	the current block being encoded or decoded. That	10:03:12
15	is correct.	10:03:15
16	Q. And what I'm trying to figure out is	10:03:15
17	that -- isn't it necessarily the case that the	10:03:17
18	current block, pixels is going to be associated	10:03:20
19	with any spatial motion vector prediction	10:03:24
20	candidate for a predicted motion vector that	10:03:26
21	would apply to that block of pixels?	10:03:29
22	A. I'm sorry, I don't -- I don't understand	10:03:31

1	your question.	10:03:33
2	Q. Yeah. So let's go back and look at	10:03:34
3	Figure 9 of the '714 patent.	10:03:36
4	A. (Complying.) Okay.	10:03:38
5	Q. All right. So when -- when you read "the	10:03:48
6	block associated with the first spatial motion	10:03:50
7	vector prediction candidate," you don't read that	10:03:53
8	as one of the blocks from which the spatial	10:03:54
9	motion vector prediction candidate comes; you	10:03:57
10	read that as the current block 900, which doesn't	10:03:58
11	have its own spatial motion vector prediction	10:04:01
12	candidate?	10:04:05
13	A. The current block 900 is the block that we	10:04:05
14	are trying to find a predicted motion vector for,	10:04:09
15	but -- so -- so the -- the -- the potential	10:04:12
16	candidates, then, for -- so the -- the potential	10:04:16
17	first motion vector prediction candidates,	10:04:21
18	right -- because we don't -- we don't know what	10:04:24
19	that's going to be in advance.	10:04:26
20	You know, this is a -- this is an	10:04:27
21	iterative process where we go from one block, and	10:04:28
22	then we -- we -- we move in a raster scan to the	10:04:33

1	next block.	10:04:35
2	So in this example in Figure 9, the	10:04:35
3	potential spatial motion vector prediction --	10:04:38
4	the -- the potential first spatial motion vector	10:04:38
5	prediction candidates are A0, A1, B2, B1, and B0.	10:04:43
6	And as I note, regardless of which of	10:04:49
7	those actually is this spatial motion vector	10:04:52
8	prediction candidate, their spatial locations are	10:04:57
9	all located relative to block 900, the current	10:05:00
10	block.	10:05:03
11	Q. Right, Doctor. I think that gets to the	10:05:05
12	crux of my question.	10:05:08
13	It -- the limitation -- the block	10:05:09
14	associated with the first spatial motion vector	10:05:13
15	prediction candidate will necessarily be met	10:05:15
16	regardless of what the first spatial motion	10:05:17
17	vector prediction candidate is in Figure 9 if we	10:05:20
18	assume "the block associated with" refers to	10:05:23
19	block 900.	10:05:26
20	It doesn't matter what the first	10:05:26
21	spatial motion vector prediction candidate is	10:05:28
22	because block 900 is in some way associated with	10:05:30

1 all of the potential first spatial motion vector 10:05:32
2 prediction candidates. 10:05:35

3 MR. LIANG: Objection to form. 10:05:35

4 A. So the problem with that question is 10:05:37
5 that the -- is that in -- in trying to phrase it 10:05:40
6 that way, you're looking at this process as a 10:05:43
7 static process, because, remember, this Figure 9 10:05:46
8 is not fixed, right? 10:05:50

9 What we're doing is we're doing a 10:05:52
10 raster scan across the image, right? So as you 10:05:53
11 pointed out, going from the upper left-hand 10:05:56
12 corner down to the lower right-hand corner -- and 10:05:58
13 this is just one instant [sic] of it, right? 10:06:01

14 So we have block 900. That's our 10:06:03
15 current block. We're doing this process. We 10:06:06
16 have a -- a set of potential first spatial motion 10:06:09
17 vector prediction candidates, right? It's 10:06:15
18 these -- these five -- five potential -- 10:06:16
19 potential ones. 10:06:19

20 But then we're moving -- we're moving 10:06:20
21 to the next block, right? 10:06:23

22 So for the next block, we have an 10:06:25

1 entirely new set of possible spatial motion

10:06:27

2 vector prediction candidates. The blocks are in

10:06:31

3 different locations.

10:06:32

4 The set of new spatial -- potential

10:06:33

5 first spatial motion vector prediction candidates

10:06:36

6 are all defined relative to the current block,

10:06:38

7 which is now in a different position.

10:06:42

8 Q. (BY MR. VERBONCOEUR) Right, and -- and I

10:06:45

9 think we agree on that point.

10:06:46

10 The set of candidates is defined

10:06:48

11 relative to the location of the current block.

10:06:50

12 A. But the set will include the first spatial

10:06:52

13 motion vector prediction candidate because that's

10:06:56

14 going to be chosen from that set. So it will

10:06:57

15 also be defined by the location of the current

10:07:00

16 block, and it will be associated with the

10:07:02

17 location of the current block.

10:07:04

18 Q. All right. And -- and so just to start

10:07:06

19 high and narrow down, so -- so your starting

10:07:08

20 point is, to start, if we know the location of

10:07:11

21 block 900, that's going to define the set of

10:07:14

22 candidates.

10:07:18

1 A. With -- yes, within the image, if we know
2 the location of -- of -- of block 900, right,
3 that will define the potential -- the potential
4 set of first prediction motion vector candidates.

5 But, again, every time, since -- since
6 the process is dynamic, as we're moving through
7 the raster scan, every time we're going to have a
8 different set; so it still is dependent.

9 It -- the -- the -- there is an
10 association of the first motion vector prediction
11 candidate with the current block because the
12 current block's going to change; and if you
13 didn't have that -- that wording in there, then
14 you wouldn't be able to say that that -- that
15 this was dependent upon the location of the block
16 when the -- when the current block changes.

17 Q. So I'd like to direct your attention to
18 Claim 23 again and the limitation that precedes
19 the "determine a subset" limitation.

20 That limitation reads, "select a first
21 spatial motion vector prediction candidate from a
22 set of spatial motion vector prediction

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10:08:04

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10:08:19

1	candidates for an encoded block of pixels."	10:08:21
2	Do you see that?	10:08:24
3	A. I do.	10:08:24
4	Q. All right. And I think we just agreed the	10:08:25
5	set of spatial motion vector prediction	10:08:27
6	candidates for an encoded block of pixels is	10:08:30
7	based on the location of that block of pixels.	10:08:33
8	A. We certainly agree with that.	10:08:36
9	And, of course, that also means that	10:08:38
10	the first spatial motion vector prediction	10:08:39
11	candidate is in that set, it has to be in that	10:08:42
12	set; so it's also based on the location of the --	10:08:44
13	of the pixels.	10:08:47
14	Q. Right.	10:08:47
15	It's necessarily the case, for any	10:08:48
16	potential first spatial motion vector prediction	10:08:50
17	candidate, that it's going to be based on the	10:08:52
18	location of the encoded block of pixels because	10:08:53
19	that's what defines your set of spatial motion	10:08:56
20	vector prediction candidates.	10:09:05
21	A. As I've -- as I've been saying, it's --	10:09:05
22	it -- it -- it -- the first spatial motion vector	10:09:08

1 prediction candidate is selected from the set of
2 spatial motion vector prediction candidates, and
3 that set depends upon the location of the current
4 block, which means that there is an association
5 between the location of the first spatial motion
6 vector prediction candidate and the location of
7 the current block.

8 Q. If we go back to the "determine a subset"
9 limitation and we deleted the words "associated
10 with the first spatial motion vector prediction
11 candidate," do you think the limitation would
12 require anything different than the way you're
13 interpreting it?

14 MR. LIANG: Objection to form.

15 A. I believe that -- that putting in the
16 caveat that the location of the block is
17 associated with the first spatial motion vector
18 prediction candidate might not be necessary
19 because of the fact that the first -- first
20 spatial motion vector candidate -- prediction
21 candidate is from a set of spatial motion vector
22 prediction candidates -- let's see.

1	Actually, no. I -- I -- I -- let me	10:10:42
2	rephrase that.	10:10:46
3	No. I -- actually, I -- I believe	10:11:04
4	it's -- I believe, with my interpretation, it is	10:11:06
5	still necessary to have that because, reading	10:11:08
6	part A of the claim, it says, "select a first	10:11:12
7	spatial motion vector prediction candidate from a	10:11:15
8	set of spatial motion vector prediction	10:11:17
9	candidates for an encoded block of pixels as a	10:11:20
10	potential spatial motion vector prediction	10:11:24
11	candidate to be included in a motion vector	10:11:26
12	prediction list for a prediction unit of the	10:11:31
13	encoded blocks where the motion vector prediction	10:11:34
14	list comprises motion vector information of the	10:11:37
15	spatial motion vector prediction candidates."	10:11:41
16	So it's -- so it's clear that there	10:11:44
17	is -- that -- that in part A, they say that the	10:11:48
18	list include -- comprises a list -- a list	10:11:51
19	comprises spatial motion information of -- let's	10:11:56
20	see -- no.	10:12:00
21	Actually, yeah. I don't see -- I	10:12:04
22	don't see anywhere in part A where they	10:12:07

1 associate -- where they associate the set of
2 spatial motion vector prediction candidates to
3 spatial location.

4 So even -- with my interpretation of
5 the block, I believe that it actually is
6 important to have the "associated with the first
7 spatial motion vector prediction candidate"
8 because, again, as -- as we are moving, as we are
9 changing blocks, as we're moving through the
10 raster scan, we're going to have a different set
11 of spatial motion vector prediction candidates,
12 which are going to be defined by the position of
13 the block.

14 And that means that our first spatial
15 motion vector prediction candidate will also be
16 defined by the location of the block.

17 Q. (BY MR. VERBONCOEUR) Would a person of
18 skill in the art, reading the first limitation of
19 the claim, "selecting a first spatial motion
20 vector prediction candidate from a set of spatial
21 motion vector prediction candidates for an
22 encoded block of pixels" understand there to be a

1 requirement that the set of spatial motion vector 10:13:11
2 prediction candidates depends on which encoded 10:13:14
3 block of pixels is being referred to? 10:13:16

4 A. I -- I mean, honestly, as a person of 10:13:23
5 ordinary skill in the art, I certainly would; but 10:13:27
6 you were asking -- your question was whether or 10:13:31
7 not, from the -- from -- again, I'm not a lawyer, 10:13:34
8 but whether or not, from a legal standpoint, 10:13:37
9 there is -- you would -- you would want to have 10:13:40
10 and need to have, with my interpretation of the 10:13:44
11 block being the block that's currently -- of 10:13:47
12 pixels currently being coded, whether or not you 10:13:49
13 would want to have a specific association of the 10:13:53
14 first -- the first spatial motion vector 10:13:57
15 prediction candidate with the location of the 10:13:59
16 block, and you would. 10:14:00

17 And you don't have that in Claim A, 10:14:04
18 even if a person of ordinary skill in the art 10:14:06
19 would have probably said, "Yeah, I -- I think 10:14:09
20 that's probably true." 10:14:10

21 I mean, the idea is -- in my 10:14:11
22 understanding of patent claims, the idea is to 10:14:13

1 write it so that -- so that it's completely clear 10:14:15
2 and so that it's -- spells out every -- every 10:14:20
3 bell and whistle of what's being claimed in the 10:14:25
4 patent claim. 10:14:28

5 Q. Okay. Please turn to Figure 9, please, of 10:14:29
6 the '714 patent. 10:14:31

7 A. I'm there. 10:14:43

8 Q. As a person -- I'm not asking you as a 10:14:44
9 lawyer or a legal matter, but as a person of 10:14:48
10 skill in the art -- well, first, you agree you -- 10:14:51
11 you've qualified as a person of skill in the art 10:14:52
12 both at the time of the patent and -- and before 10:14:55
13 and after that? 10:14:57

14 A. Yes, I would agree with that. 10:14:57

15 Q. Okay. As a person of skill in the art, 10:14:58
16 looking at Figure 9 of the '714 patent, if you 10:15:02
17 wanted to describe the block from which the 10:15:06
18 motion vector prediction candidate -- well, let 10:15:10
19 me -- let me rephrase this. 10:15:15

20 You're here with me? You're looking 10:15:16
21 at Figure 9? 10:15:20

22 A. I am looking at Figure 9. I'm here with 10:15:21

1	you.	10:15:24
2	Q. Okay. And we agree that one way of	10:15:24
3	describing the block labeled "900" in Figure 9 is	10:15:26
4	"current block"?	10:15:30
5	A. That seems like a reasonable describe -- a	10:15:31
6	reasonable description, yes.	10:15:33
7	Q. Okay. One way of describing the blocks	10:15:33
8	that are -- are labeled "901" through "905" -- or	10:15:37
9	I think we've used the term "neighboring blocks."	10:15:41
10	A. I would use the term "reference block."	10:15:44
11	Q. Would you understand what I meant if I --	10:15:47
12	if I called those "neighboring blocks"?	10:15:50
13	A. Certainly; but, of course, one does not	10:15:51
14	have to use "neighboring blocks" as the	10:15:53
15	reference. So you can call them "neighboring	10:15:56
16	blocks." I can call -- I will call them	10:15:58
17	"reference blocks."	10:16:00
18	Q. Okay. And -- and in this case, in	10:16:00
19	Figure 9's context, blocks 901 through 905 are	10:16:04
20	both reference blocks, and because they relate to	10:16:10
21	spatial motion vector prediction candidates,	10:16:12
22	they're also neighboring blocks?	10:16:13

1 A. Well, they -- they are neighboring blocks
2 and they are in the same frame, so they are
3 spatial neighbors.

4 Q. How would a person of skill in the art who
5 was writing a paper describe a particular block
6 from which one of the spatial motion vector
7 prediction candidates came in Figure 9?

8 A. They would probably say, "I had a spatial
9 motion vector candidate. I -- I took one out of
10 block A1 or block B2 or B1 or B0."

11 Q. And what if they wanted to leave undefined
12 which of A0, A1, B0, B1, B2 is, but they wanted
13 to make clear there is some relationship between
14 that block and a motion vector from which -- or
15 that -- that arose out of that block? How would
16 they describe such a block?

17 A. I think they would probably say, "We
18 select a motion vector from block A0, A1, B2, B1,
19 or B0 in some manner."

20 Q. Okay. Thank you.

21 MR. VERBONCOEUR: And we've been
22 going for a little over an hour, so I think now

1	is an okay time for a break.	10:17:36
2	(Break taken from 10:17 a.m. to	10:17:39
3	10:29 a.m.)	10:29:56
4	(Whereupon Exhibit 5 was marked	10:29:56
5	for identification.)	10:29:56
6	MR. VERBONCOEUR: I'd like to	10:29:59
7	introduce as Exhibit 5 the Rusert patent.	10:30:01
8	Q. (BY MR. VERBONCOEUR) Okay. And you have	10:30:38
9	in front of you, Doctor, what's been marked as	10:30:39
10	Exhibit 5.	10:30:41
11	Do you recognize Exhibit 5 as the	10:30:42
12	Rusert reference?	10:30:44
13	A. Yes.	10:30:46
14	Q. Okay. And in Exhibit 5, Rusert, if we	10:30:47
15	look at the various Figure 3s on Page 3 of the	10:30:56
16	reference...	10:31:00
17	A. Yes, I'm looking at the Figure 3s.	10:31:01
18	Q. And do you agree that in the various	10:31:03
19	Figure 3s of Rusert, these are all different	10:31:07
20	possible scan patterns that Rusert discusses?	10:31:11
21	A. Well, not entirely.	10:31:35
22	If you read the description of --	10:31:38

1 of -- of Figure 3 in paragraph 30, Figures 3A
2 through 3N illustrate possible scan patterns and
3 distance measures for -- for a plurality of
4 surrounding -- blocks surrounding the current
5 block.

6 So some of these, for example, 3D, for
7 example, is clearly a -- a distance measure.

8 Q. That's fair.

9 So -- so the various Figure 3s will
10 either show you possible distance measures, for
11 example, Figure 3D, Figure 3F, or possible scan
12 patterns in Rusert, for example, Figure 3N?

13 A. Yes, that -- I would agree with that
14 statement.

15 Q. And going back to the '714 patent that was
16 marked as Exhibit 1 -- feel free to look at it if
17 you'd like, but we were just talking about Claim
18 23.

19 And there's a part of -- of Claim 23
20 that -- that says say "a set of spatial motion
21 vector prediction candidates," and I'd like to
22 ask you about that part of the claim in the

10:31:40

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1	context of Rusert.	10:32:50
2	A. So are you referring to claim limitation A	10:33:01
3	where it says, "a set of spatial motion vector	10:33:05
4	prediction candidates"?	10:33:09
5	Q. Yes, "a set of spatial motion vector	10:33:09
6	prediction candidates for an encoded block of	10:33:12
7	pixels."	10:33:14
8	Do you -- do you see that in the	10:33:14
9	claims of the '714 patent?	10:33:15
10	A. Yes, I do see it.	10:33:17
11	Q. Okay. I'd like to ask you about a set of	10:33:18
12	spatial motion vector prediction candidates for	10:33:21
13	an encoded block of pixels in the context of	10:33:22
14	Rusert.	10:33:25
15	A. Okay.	10:33:26
16	Q. And what is your view on, if any, the set	10:33:26
17	of spatial motion vector prediction candidates	10:33:33
18	for an encoded block of pixels in Rusert? What	10:33:36
19	is it?	10:33:40
20	A. Well, certainly.	10:33:41
21	And, in fact, since you're asking my	10:33:42
22	opinion, I think it's -- it's good to start with	10:33:43

1	the -- with the information in my declaration.	10:33:45
2	Then we can go from there.	10:33:47
3	So in -- so I'm referring to -- to	10:33:49
4	begin with, let's take a look at paragraph 102	10:33:58
5	in -- in the -- what did we call it, the -- the	10:34:02
6	604 declaration, which is the one we're dealing	10:34:07
7	with here.	10:34:10
8	Okay. So 102 is related to the Claim	10:34:10
9	1 limitation -- this is related to claim	10:34:16
10	limitation 1A, but the language is -- is -- I	10:34:18
11	believe is essentially the same in claim	10:34:20
12	limitation 23A.	10:34:23
13	So just -- let me just read this to	10:34:24
14	begin with. "Ground one teaches selecting a	10:34:28
15	first spatial motion vector prediction candidate,	10:34:30
16	i.e. -- e.g., a PMV candidate" --	10:34:40
17	THE COURT REPORTER: I.e. what?	10:34:40
18	THE WITNESS: Sorry, e.g.	10:34:40
19	A. -- "e.g., a PMV candidate" --	10:34:40
20	(Reporter clarification.)	10:34:40
21	A. -- "from a set of spatial motion vector	10:34:49
22	prediction candidates," and then it goes,	10:34:53

1	parentheses, "e.g., set of previously coded	10:34:54
2	motion vectors for a block of pixels."	10:34:58
3	For example, RuserT refers to a	10:35:01
4	predicted motion vector as a PMV and teaches,	10:35:04
5	quote, selecting dot, dot, dot, PMV candidates	10:35:09
6	from, quote, a set of previously-coded motion	10:35:13
7	vectors that were used for previous blocks.	10:35:19
8	And then I give a number of citations	10:35:21
9	to that.	10:35:23
10	So if we go to RuserT, RuserT --	10:35:23
11	RuserT-- if we look -- if we look at some of	10:35:29
12	these citations -- so let's, for example, take a	10:35:35
13	look at -- in RuserT now, which is Exhibit 5 -- I	10:35:38
14	guess if we take a look at one of these	10:35:42
15	paragraphs -- let's look at paragraph 15.	10:35:48
16	So in paragraph 15, what RuserT says	10:35:52
17	is, "The method may comprise identifying allowed	10:35:57
18	positions of previous blocks and wherein the set	10:36:03
19	of PMV candidates comprises a subset of the set	10:36:06
20	of previously-coded motion vectors that were used	10:36:11
21	for previous blocks having allowed distance from	10:36:15
22	the current block and an allowed position."	10:36:18

1 So now the question is: What is this
2 referring to?

3 So to see what this is referring to,
4 we can -- for example, in my -- in my deposition
5 [sic], if we go to the figures above paragraph
6 106, which are figures from Rusert -- so these
7 are Figures 3C and 3N.

8 This denotes what Rusert is -- is
9 referring to here, as far as this -- this idea of
10 where he says, "The selected set of PMV
11 candidates comprises a subset of the set of
12 previously-coded motion vectors."

13 So both Figure 3C and Figure 3N
14 illustrate such a set.

15 And in particular, in terms of Rusert,
16 let's take a look at Figure 3N. So that set,
17 then, the set of previously-coded motion vectors,
18 would be every -- so the dot in Figure 3N
19 represents the current block.

20 It would be every block shown in
21 this -- in this figure that does not have a dash,
22 so if it has a number, so 1, 2, 3, 4, up through

10:36:22

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10:36:49

10:36:53

10:36:56

10:37:00

10:37:01

10:37:05

10:37:07

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10:37:13

10:37:17

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10:37:23

10:37:26

10:37:30

1	letters F.	10:37:34
2	So -- and in -- in Figure 3C, that set	10:37:35
3	of -- of prediction motion vector candidates	10:37:41
4	would be -- again, the dot is the current -- the	10:37:47
5	current block, so every -- every labeled block	10:37:49
6	that has a number or a letter in Figure 3C.	10:37:54
7	Q. (BY MR. VERBONCOEUR) Okay. So in Rusert,	10:37:56
8	looking at, for example, Figure 3N, Rusert's set	10:38:01
9	of candidates would be -- each block that has	10:38:05
10	something other than a dash would comprise the	10:38:08
11	set of candidates?	10:38:11
12	A. Yes, the -- and at -- we've talked about	10:38:15
13	this before, but it would be the motion vectors	10:38:18
14	of those blocks, but, yes.	10:38:21
15	Q. Okay. And -- and for Figure 3C, each	10:38:24
16	motion vector associated with a block that has	10:38:28
17	something other than a dash would be the set of	10:38:30
18	candidates in Rusert?	10:38:33
19	A. That is -- that is correct, yes.	10:38:35
20	Q. Okay. Okay. Now I'd like to ask you --	10:38:37
21	we'll -- we'll revisit Rusert, but I'd like to	10:38:52
22	turn back to the '714 patent now.	10:38:54

1 Okay. So, Doctor, we've been using 10:39:03
2 Claim 23 as our representative claim here; so I'd 10:39:33
3 like to revisit that, and I'd like to look at the 10:39:36
4 "compare motion information" limitation. 10:39:40

5 Let me know when you're able to see 10:39:43
6 that. 10:39:48

7 A. Sure. I'm just rereading it for my own 10:39:48
8 edification first. 10:39:51

9 (Witness reviewing the document.) 10:39:51

10 Okay. 10:40:02

11 Q. Okay. And -- and we're looking at Claim 10:40:02
12 23; but every independent claim has a limitation 10:40:05
13 that says "compare" or "comparing motion 10:40:07
14 information" and then dot, dot, dot. 10:40:10

15 A. I agree. Every independent -- every 10:40:13
16 independent claim has this or it has 10:40:16
17 an equivalent -- equivalent claim limitation. 10:40:21

18 Q. Okay. Thank you. 10:40:23

19 And so I want to get your take on what 10:40:24
20 this limitation means. 10:40:27

21 And here we've got a verb, "compare 10:40:28
22 motion information of the first spatial motion 10:40:31

1	vector prediction candidate with motion	10:40:35
2	information of the spatial motion vector	10:40:37
3	prediction candidate in the determined subset."	10:40:39
4	Do you see that?	10:40:41
5	A. I do.	10:40:42
6	Q. And -- and so here what we're talking	10:40:43
7	about is a particular spatial motion vector	10:40:46
8	prediction candidate, the first one, and it's	10:40:48
9	being compared to something that's in the subset.	10:40:50
10	A. I agree.	10:40:54
11	It -- the -- you have the first	10:40:55
12	spatial motion vector prediction candidate, and	10:40:57
13	it's -- it is being compared to a spatial motion	10:40:59
14	vector prediction candidate that's in the	10:41:05
15	determined subset.	10:41:05
16	Q. Okay. And now I want to look at the --	10:41:06
17	the next limitation that says, "determine to	10:41:09
18	include or exclude the first spatial motion	10:41:15
19	vector prediction candidate in the motion vector	10:41:18
20	prediction list based on comparison of the motion	10:41:21
21	information of the first spatial motion vector	10:41:24
22	prediction candidate with motion information of	10:41:28

1 the spatial motion vector prediction candidate."

10:41:30

2 Do you read the "determine to include
3 or exclude based on comparison" to refer back to
4 the "comparing motion information" limitation
5 that we just looked at before?

10:41:31

10:41:34

10:41:38

10:41:39

6 A. Let me take a look at my declaration.

10:41:46

7 Yes, I -- I would agree that the
8 determination in that claim limitation is based
9 on the comparison done in the previous claim
10 limitation.

10:43:10

10:43:12

10:43:20

10:43:24

11 Q. Okay. Thank you.

10:43:24

12 And now let's go back to the "compare
13 motion information" limitation, because I only
14 read part of it.

10:43:25

10:43:29

10:43:31

15 That limitation says, "compare motion
16 information of the first spatial motion vector
17 prediction candidate with motion information of
18 the spatial motion vector prediction candidate in
19 the determined subset of spatial motion vector
20 prediction candidates without making a comparison
21 of each possible candidate pair from the set of
22 spatial motion vector prediction candidates."

10:43:32

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10:43:52

1	Do you see that?	10:43:52
2	A. Yes, I do.	10:43:55
3	Q. And specifically, I want to ask you about	10:43:58
4	the part of the limitation "without making a	10:44:01
5	comparison of each possible candidate pair from	10:44:03
6	the set of spatial motion vector prediction	10:44:06
7	candidates."	10:44:06
8	Is it your opinion that that part	10:44:08
9	modifies the "compare motion information" action	10:44:11
10	that's being required here by this limitation?	10:44:14
11	A. So you are asking if -- does the --	10:44:29
12	without making a comparison of each possible	10:44:33
13	candidate pair from the set of spatial motion	10:44:38
14	vector prediction candidates, if -- you're asking	10:44:40
15	if that modifies the "compare motion vector"	10:44:42
16	information of the first motion vector prediction	10:44:47
17	candidate? Is that what you're asking?	10:44:50
18	Q. That's right.	10:44:51
19	A. Yeah, I -- I think it -- it does modify	10:44:52
20	it. Yeah, I believe so.	10:44:55
21	Q. Thank you.	10:44:56
22	And -- and so now I'd like to get your	10:44:59

1	take on what it means to be each possible	10:45:01
2	candidate pair.	10:45:04
3	What's your understanding of that	10:45:05
4	term, "possible candidate pair"?	10:45:07
5	A. Well, I mean, I -- I think -- I think	10:45:10
6	we -- I can't really define that term without	10:45:17
7	looking at the overall limitation, so, you know,	10:45:20
8	in more -- more complete -- in complete	10:45:21
9	structure.	10:45:23
10	So it's saying -- it says -- so the	10:45:23
11	full limitation is, "compare motion information	10:45:26
12	of the first spatial motion vector prediction	10:45:28
13	candidate with motion information of the spatial	10:45:31
14	motion vector prediction candidate in the	10:45:36
15	determined subset of spatial motion vector	10:45:36
16	prediction candidates without making a comparison	10:45:41
17	of each possible candidate pair from the set of	10:45:42
18	spatial motion vector prediction candidates."	10:45:47
19	So my interpretation of that entire --	10:45:48
20	entire statement is that -- is that you have a	10:45:52
21	set of spatial motion vector prediction	10:45:57
22	candidates. You have a first motion vector	10:46:00

1	prediction candidate.	10:46:06
2	So let's say the set included ten	10:46:06
3	spatial motion vector prediction candidates.	10:46:10
4	Then you would not compare it to each of those	10:46:11
5	ten. So you wouldn't compare it to candidate --	10:46:14
6	the first one. You wouldn't compare it to the	10:46:17
7	candidate number one and then compare it to	10:46:19
8	candidate number two and then compare it to	10:46:22
9	candidate number three, et cetera, you know, and	10:46:24
10	compare it to every candidate in that set.	10:46:27
11	Q. Okay. And -- and I -- I think this gets	10:46:29
12	to the crux of the matter.	10:46:32
13	Do you see "possible candidate pair"	10:46:33
14	as being defined with respect to the determined	10:46:37
15	subset for which the comparison is -- or with	10:46:40
16	which the comparison is being done, or do you see	10:46:42
17	that as defined with respect to just every member	10:46:45
18	of the set?	10:46:48
19	A. Again, if I read this, it says -- just the	10:46:51
20	last part this time, so doing the compare --	10:46:54
21	so -- well, it's "compare motion information of	10:46:59
22	the first motion vector prediction candidate with	10:47:02

1 motion information of the spatial motion vector 10:47:04
2 prediction candidate in the determined subset of 10:47:09
3 spatial motion vector prediction candidates 10:47:13
4 without making comparison to each possible pair 10:47:17
5 of spatial motion vec- -- pair from the set of 10:47:20
6 spatial motion vector prediction candidates." 10:47:25

7 So -- so my interpretation of this is 10:47:26
8 that -- is that you do not compare the first 10:47:29
9 spatial motion vector prediction candidate to all 10:47:35
10 of the candidates in the set. 10:47:38

11 Q. And the reason I'm asking this is because 10:47:44
12 I'm wondering what meaning the -- the word 10:47:47
13 "possible" has in that context, because, of 10:47:50
14 course, if you have a set of candidates, all -- 10:47:53
15 the set of all potential pairs will just be every 10:47:57
16 permutation of two members of the set; whereas, 10:48:01
17 one -- the other way of reading this limitation 10:48:05
18 is that the set -- or "without making comparison 10:48:08
19 of each possible candidate pair" refers to the 10:48:10
20 possible candidate pair as based on the 10:48:13
21 determined subset. 10:48:16

22 MR. LIANG: Objection to form. 10:48:25

1 A. I think -- I -- I -- I don't -- I don't
2 see that -- that "possible" really has any impact
3 on my opinion.

4 I mean, if we go back to the first
5 claim limitation, right, the first claim
6 limitation says that, "select a first spatial
7 motion vector prediction candidate -- prediction
8 candidate from a set of spatial motion vector
9 prediction candidates for an encoded block."

10 So we have a set, right? We have a
11 set of spatial motion vector prediction
12 candidates as a potential spatial motion vector
13 prediction candidates [sic] to be included in a
14 motion vector prediction list. Okay? And the
15 rest of it's not really germane.

16 So limitation two is, "determine a
17 subset of spatial motion vector prediction
18 candidates."

19 So the clear implication here is that
20 subset is a subset of the set from which the
21 first spatial motion vector prediction candidate
22 was selected.

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1	So now we go down to the	10:49:26
2	"determination" limitation. It says, very	10:49:29
3	clearly, that we are going to "determine to	10:49:33
4	include or -- or exclude the first spatial motion	10:49:36
5	vector prediction candidate in the motion -- in	10:49:41
6	the motion vector prediction list based on	10:49:44
7	comparison of the first" -- sorry -- "comparison	10:49:47
8	of the motion information of the first spatial	10:49:52
9	motion vector prediction candidate with motion	10:49:56
10	information of -- of -- spatial motion" -- okay.	10:49:58
11	So, yeah, "with motion information of	10:50:04
12	the spatial motion vector prediction candidate."	10:50:07
13	Sorry, we've got to go -- I skipped	10:50:08
14	one down.	10:50:10
15	Okay. So the comparison is done	10:50:11
16	based, as you said, on the limitation above.	10:50:13
17	That was the one I meant to read.	10:50:15
18	So "compare motion information of the	10:50:17
19	first spatial motion vector prediction candidate	10:50:20
20	with motion information of the spatial motion	10:50:21
21	prediction candidate -- motion vector prediction	10:50:26
22	candidate in the determined subset."	10:50:28

1 So clearly, that subset, based on the
2 limitation above, was extracted from a set that
3 was defined in the first claim limitation from
4 which the first spatial motion vector prediction
5 candidate was selected.

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6 And then it says, further on, "without
7 making a comparison of each possible candidate
8 pair from the set" -- so possible pairs from the
9 set. That set is the set from which the subset
10 itself was derived of the spatial motion vector
11 prediction candidates.

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12 Q. (BY MR. VERBONCOEUR) All right. And so I
13 think you understand the two ways of reading
14 this, one being, when it says "each possible
15 candidate pair," that's referring to the -- the
16 possible comparisons that could be done; and then
17 the other is, you know, if we start with the set,
18 what are all of the potential pairs you might
19 come up with based on the overall set.

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20 And -- and I think you -- you're
21 saying you interpret that phrase, "each possible
22 candidate pair," to refer to the -- the latter

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1 interpretation; that is, what are all the 10:51:30
2 possible permutations we could have of a given 10:51:32
3 set of candidates. 10:51:34

4 A. I believe I've said -- I refer that -- 10:51:36
5 in -- in the case of -- of -- do not make a 10:51:38
6 comparison. 10:51:41

7 So, again, if -- you know, if we look 10:51:41
8 at -- if we look at, say, Figure 3N of Rusert, 10:51:43
9 right, and then we -- we look at the set as 10:51:50
10 including all of the numbered and lettered 10:51:53
11 blocks, then I would count one, two, three, four, 10:51:55
12 five, six, seven, eight, nine, ten, eleven, 10:51:58
13 twelve, thirteen, fourteen, fifteen -- I think 10:52:02
14 I -- I count fifteen -- fifteen blocks in the 10:52:05
15 set. 10:52:07

16 So my interpretation of -- with 10:52:08
17 respect to that, if -- if we're looking at that 10:52:11
18 example -- so our set would include fifteen 10:52:13
19 blocks that contain -- that could contain 10:52:20
20 predicted motion vectors. 10:52:26

21 And in terms of this limitation of not 10:52:26
22 making comparisons to all -- all possible 10:52:28

1 candidates in the set, I would say that means
2 that you have your first motion vector candidate
3 and you don't compare it to all of those fifteen
4 things. You don't compare it to one and compare
5 it to two and compare it to three and compare it
6 to four.

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7 Q. And, Doctor, I see you have the -- your
8 604 declaration in front of you.

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10:52:46

9 Can you -- can you please let me know
10 what -- what paragraph you just referred to when
11 looking at --

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12 A. Sure.

10:52:52

13 Well, I'm looking at -- I'm actually
14 looking at the -- just the annotated version of
15 3N; but actually, that refers to paragraph 130 --

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16 Q. Okay.

10:53:00

17 A. -- which -- which basically looks at --
18 which considers the status -- considers
19 that which -- it shows my analysis of how Rusert
20 satisfies Claim 1B with respect to the
21 alternative block definition proposed by the
22 PTAB, which basically says that -- if we go

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1 through this -- I'll read it for you, since I was
2 referring to it.

3 So the text is, (as read)
4 Alternatively, if "the block" were interpreted to
5 mean the block of pixels from the selected
6 first -- from which the first vector -- first
7 candidate was obtained, RuserT also teaches this.
8 For example, RuserT teaches that a "position" of
9 a block of PM -- of a PMV candidate is expressed
10 as, parenthesis, xpos, comma, ypos, denoting a
11 coordinate comprising an X-coordinate and a
12 Y-coordinate of the block, i.e., a location of
13 the block associated with the first spatial
14 motion vector prediction candidate.

15 Based on the location of the block of
16 the PMV candidate, RuserT teaches that the subset
17 of PMV candidates with which the block -- with
18 which the PMV candidate is compared includes the
19 PMV candidates of blocks located in the scan
20 pattern up to the PMV candidate; for example,
21 following...

22 And this is the -- the -- this example

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1 is what I referred to, the figure I referred to.

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2 (As read) For example, following the
3 scan pattern of -- illustrated in Figure 3N, the
4 PMV candidate associated with the block located
5 at 3 -- located at 3 would be compared with a
6 subset of PMV candidates that include the PMV
7 candidates of blocks 1 and 2, as illustrated
8 below.

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9 Q. Okay. And so looking at your annotated
10 version of Figure 3N of Ruser that appears below
11 paragraph 130 of your declaration, you've
12 identified Ruser's 1 and 2 as the subset of what
13 you point to as a first spatial motion vector
14 prediction candidate labeled "3"?

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15 A. At that point in the processing, that's
16 correct.

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17 Now, it's -- it's -- it should be
18 noted that, again, this processing is dynamic.

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19 So, for example, if the first motion
20 vector prediction candidate was actually block 2,
21 then the subset would consist of block 1, motion
22 vector information from block 1.

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1 If, on the other hand, it was block 4,
2 then the subset would consist of the motion
3 information from blocks 1, 2, and 3.

4 Q. Okay. And if we're looking at a first
5 spatial motion vector prediction candidate of
6 block 2, you agree that in Rusert, looking at
7 Figure N -- 3N, the subset would be block 1?

8 A. If the first spatial motion vector
9 prediction candidate is block 2, then the subset
10 would be block 1.

11 Q. And the way Rusert works, by the time you
12 get to block 2 in the scan order, the only block
13 that has been processed to date is block 1?

14 A. Well, that -- that is clearly correct.
15 Rusert's -- Rusert starts -- Rusert follows the
16 scan pattern, as denoted by the numeric order of
17 these blocks, prior to going into lettering of
18 the blocks.

19 Q. Okay.

20 A. And so block 1 will be considered first,
21 block 2 will be considered next, and so on.

22 Q. And Rusert discloses that you follow the

1 scan order in order; that is, you do 1, 2, and 3, 10:56:36
2 4, et cetera. And Rusert doesn't say anything 10:56:39
3 about disregarding that order? 10:56:42

4 A. Well, Rusert -- I should point out, 10:56:47
5 Rusert -- Rusert says that you -- that you -- 10:56:50
6 that you follow a scan pattern that is based on 10:56:52
7 the location of the current block or, in this 10:56:59
8 case, in this -- in this -- in this discussion, 10:57:01
9 actually based on the location of the first -- 10:57:03
10 the block corresponding to the first prediction 10:57:07
11 candidate, because while these -- these 10:57:10
12 numbers -- these -- these things -- these -- 10:57:15
13 these blocks are labeled numerically. These 10:57:16
14 blocks correspond to spatial locations in the -- 10:57:21
15 in the -- in the -- in the image, in the -- in 10:57:25
16 the image block. In fact, I have a pretty nice 10:57:30
17 diagram of that here somewhere. 10:57:33

18 So if we look at Figure 3N, I think 10:57:37
19 that shows the process very clearly. This is -- 10:57:42
20 I'm sorry, Figure 3N. This is on page -- this is 10:57:46
21 above paragraph 108. It is Figure 3N on there, 10:57:48
22 but it's an annotated version. 10:57:52

1	And what it shows is it shows the	10:57:53
2	Rusert scan pattern with the numeric values, but	10:57:55
3	it shows that those numeric values form a spiral	10:57:59
4	relative to the previously-encoded blocks.	10:58:02
5	A spiral -- the spiral clearly shows	10:58:05
6	that the numeric values are related to the	10:58:07
7	location of -- the relative locations of these	10:58:10
8	previously-encoded blocks.	10:58:14
9	Q. Right.	10:58:15
10	So let's go back to the annotated	10:58:16
11	version of Figure 3N that you have below	10:58:18
12	paragraph 130 of your declaration.	10:58:20
13	A. Okay.	10:58:22
14	Q. And following that spiral pattern, when	10:58:22
15	we're looking at a first spatial motion vector	10:58:26
16	prediction candidate labeled "2" at that	10:58:28
17	location, the only location that's been processed	10:58:30
18	at that point is 1?	10:58:33
19	A. I -- I already answered that question. I	10:58:37
20	already -- I already agreed that, yes, at that	10:58:40
21	point, the only location that had been processed	10:58:41
22	is 1. It's a dynamic process, so it's going	10:58:44

1	to --	10:58:44
2	Q. Right.	10:58:44
3	A. -- going to -- going to continue, you	10:58:48
4	know, until it fills up its list to the maximum	10:58:48
5	value.	10:58:51
6	Q. In looking at Ruser's Figure 3N, the only	10:58:52
7	comparison that would be possible in Ruser's	10:58:55
8	system, using the scan pattern of Figure 3N when	10:58:58
9	you're processing block 2, is a comparison with	10:59:01
10	block 1.	10:59:04
11	A. That's correct.	10:59:06
12	So when we are at block 2, we've	10:59:07
13	already processed block 1. What we'll do is	10:59:10
14	we'll do a comparison. We will compare the	10:59:13
15	motion information from block 2 to the motion	10:59:16
16	information from block 1.	10:59:20
17	Q. All right. And in -- if our first spatial	10:59:21
18	motion vector prediction candidate is 3, which is	10:59:26
19	the example you have here below paragraph 130 of	10:59:29
20	your declaration, the only possible comparisons	10:59:32
21	that can be done are to 2 and 1?	10:59:35
22	A. At block 3 the -- the subset will consist	10:59:41

1	of block -- of the motion information	10:59:45
2	corresponding to blocks 1 and 2.	10:59:48
3	So you would do the comparison with a	10:59:50
4	subset that includes motion information from	10:59:52
5	blocks [sic] 1 and block 2.	10:59:56
6	Q. Okay. And looking at your example of	10:59:57
7	Figure 3N, when Rusert is processing block 3, it	11:00:00
8	doesn't know anything about blocks 4, 5, and 6.	11:00:04
9	So obviously, those aren't possible comparisons	11:00:06
10	at that point?	11:00:10
11	MR. LIANG: Objection to form.	11:00:10
12	A. I'm not sure that's -- that's -- in fact,	11:00:13
13	I don't -- I don't agree that's an accurate	11:00:16
14	statement.	11:00:18
15	Rusert -- so Rusert proposes multiple	11:00:18
16	scan orders that are all based on spatial	11:00:25
17	locations relative to the current block being	11:00:28
18	encoded.	11:00:31
19	3N represents one of those scan	11:00:32
20	orders. We looked at 3D earlier. That	11:00:34
21	represents another scan order.	11:00:37
22	But that scan order, once you	11:00:38

1 select -- so Rusert -- Rusert envisions having --
2 and discusses having multiple scan orders and, in
3 fact, says, you know, 3N -- Rusert ultimately
4 concludes that 3N is a much better scan order
5 choice than -- for example, if we look at Rusert,
6 Rusert also proposes a scan order of 3M, which is
7 not -- which I don't directly cite in my -- in
8 my -- in my declaration.

9 But what Rusert says, 3M has far more
10 potential prediction motion vectors in it than 3N
11 does; and Rusert says, well, 3M is great, but the
12 complexity -- the computation complexity of
13 implementing it would be too high.

14 So Rusert proposes 3N as a compromise
15 that would give good performance with more
16 reasonable computation complexity.

17 So Rusert does propose a number of
18 scan orders; but once you have fixed the scan
19 order, once you have -- once you have the scan --
20 the scan order, then this -- then the locations
21 of all of these blocks is all a priori.

22 So even though at block 3 we have not

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1 yet considered block 4 or block 5, we know -- you 11:01:55
2 could say block 3 knows where block 4 and block 5 11:02:00
3 are spatially located relative to itself because 11:02:03
4 that scan order has been fixed in any given 11:02:06
5 realization of Rusert. 11:02:10

6 Q. (BY MR. VERBONCOEUR) So once we fix the 11:02:11
7 scan order in Rusert, there's some a priori 11:02:13
8 knowledge of where blocks 4, 5, and 6 will be; 11:02:17
9 but the scan order dictates the processing order 11:02:20
10 such that block 3 is -- is going to be compared 11:02:23
11 to blocks 2 and 1 if they're available? 11:02:25

12 A. I can say that -- that block 3 will 11:02:30
13 definitely be compared to blocks [sic] 2 and 11:02:34
14 block 1; and block 3 will not, in the Rusert 11:02:37
15 realization, be compared at that time to block 4. 11:02:42

16 Now, when you move on, when you move 11:02:47
17 on to the next element -- let's -- let's say 11:02:50
18 you're -- you're -- you're allowing your final 11:02:52
19 prediction list -- you know, the endpoint of PMV 11:02:55
20 cans when you've completed this process, let's 11:03:00
21 say you're allowing it to have up to five 11:03:03
22 predicted motion vectors, then, you know, let's 11:03:05

1 assume that blocks 1, 2, and 3 have all been
2 entered and were acceptable.

3 Then block 4 will then be compared to
4 block 3 and -- to determine whether or not it --
5 it is entered into the -- into the list -- well,
6 subset at this point, will end up being the final
7 list when we're finished with this process.

8 And then if we allow ourselves up to
9 five, then block 5 would also be considered.

10 Q. Right.

11 I'm going to go back to the '714
12 patent that I've marked as Exhibit 1 and ask you
13 your interpretation about another part of the
14 claim.

15 A. Well, I'm in the '71 -- '714 patent, so...

16 Q. Okay. And let's just use Claim 23 because
17 we've been referring to that claim.

18 Specifically I want to ask you about
19 the "determine a subset of spatial motion vector
20 prediction candidates based on the location of
21 the block associated with the first spatial
22 motion vector prediction candidate."

1 And -- and -- and we've talked a lot 11:04:11
2 about the block associated with the first spatial 11:04:13
3 motion vector prediction candidate, but I want to 11:04:17
4 get your take on the phrase "based on." 11:04:18

5 What would a person of skill in the 11:04:20
6 art, reading "based on," understand that to mean? 11:04:22

7 A. "Based on" is a -- is a very, sort of 11:04:33
8 generic and nebulous term. It doesn't have any 11:04:36
9 special meaning to somebody -- in this context, 11:04:39
10 to somebody who's a person of ordinary skill in 11:04:41
11 the art. 11:04:41

12 So I don't know that -- that such a 11:04:44
13 person would infer any -- any special meaning 11:04:46
14 there, other than the fact that there has to be 11:04:49
15 some relationship between -- between the -- the 11:04:51
16 subset and the location associated with the 11:05:00
17 block -- the location of the block associated 11:05:08
18 with the -- the first spatial motion vector 11:05:10
19 prediction candidate. 11:05:13

20 So I -- I believe that the only thing 11:05:13
21 that a person of ordinary skill in the art would 11:05:16
22 infer from this is that there is some relation 11:05:18

1 between them, but -- but not what kind of 11:05:22
2 relation that would be. 11:05:25

3 Q. So -- so you don't think that the "based 11:05:25
4 on" language in the "determine a subset" 11:05:29
5 limitation requires, like, a one-to-one 11:05:32
6 correspondence between a subset and the location 11:05:34
7 of the block associated with the first spatial 11:05:36
8 motion vector prediction candidate? 11:05:41

9 A. I don't see that it -- it's -- it's -- if 11:05:41
10 you -- it does not require that. I mean, no 11:05:43
11 person of ordinary skill in the art would 11:05:45
12 interpret it as requiring that. 11:05:48

13 That's -- that's -- it requires that 11:05:49
14 there be a relationship, but -- but without 11:05:50
15 defining that relationship, I believe that the 11:05:53
16 relationship is open. 11:05:55

17 Q. Okay. So it would be -- I guess from that 11:05:56
18 perspective of this "determine a subset" 11:06:00
19 limitation, the limitation that read "determine a 11:06:03
20 subset of spatial motion vector prediction 11:06:07
21 candidates based, at least partly, on the 11:06:08
22 location of the block associated with the first 11:06:10

1 spatial motion vector prediction candidate" would 11:06:12
2 be, in effect, identical to "determine a subset 11:06:13
3 of spatial motion vector prediction candidates 11:06:17
4 based on the location of the block associated 11:06:18
5 with the first spatial motion vector prediction 11:06:21
6 candidate"? 11:06:23

7 A. I think -- I think -- I think -- so I 11:06:23
8 think if you look at the '714 patent embodiments 11:06:30
9 and you look at how it's working, what you see is 11:06:34
10 that the subset determination process is an 11:06:38
11 adaptive process, right? 11:06:42

12 In other words, it's -- it -- even 11:06:44
13 within the '7 -- '714 embodiment, it's using the 11:06:46
14 locations of the blocks; but what actually gets 11:06:50
15 into the subset is determined by the contents of 11:06:56
16 those blocks, right, because you're doing the 11:06:59
17 comparison. 11:07:02

18 You're using -- you're using the 11:07:02
19 locations. You're doing a comparison; and when 11:07:03
20 you do that comparison, you figure out whether or 11:07:06
21 not B0 or B1 gets into the subset. 11:07:09

22 So I do believe that that -- even 11:07:12

1 within the embodiment of the '7 -- '714 patent, 11:07:15
2 what ends up in that subset is not determined 11:07:19
3 only by the location of the block -- of the 11:07:21
4 blocks, the various blocks involved -- in 11:07:25
5 particular, in this case, the location associated 11:07:29
6 with the -- with the block corresponding to the 11:07:30
7 first spatial motion vector prediction candidate. 11:07:33

8 But what ends up in the subset is also 11:07:36
9 determined by what is in -- the motion vectors in 11:07:39
10 those blocks because the comparisons that you're 11:07:44
11 doing will decide who gets into the subset and 11:07:47
12 who doesn't. 11:07:49

13 Q. And I may be misunderstanding your 11:07:50
14 testimony here, Doctor; but the way I read the 11:07:54
15 claim, the "determine a subset" happens before 11:07:57
16 the "compare motion information" step. 11:07:59

17 Do you have that same understanding of 11:08:02
18 the '714 patent claims? 11:08:04

19 A. Well, it's -- the -- the -- the -- the 11:08:05
20 claim limitation certainly states -- states that 11:08:09
21 the determination of the subset happens before 11:08:11
22 that. 11:08:13

1 However, just as Rusert is a -- is an 11:08:14
2 iterative process, going through, you know, 11:08:20
3 selective -- a selective set of tests based on 11:08:24
4 the spatial location of the first motion vector 11:08:27
5 prediction, as I described with respect to my 11:08:31
6 paragraph 130 before, '714 does the same kind of 11:08:32
7 thing. 11:08:36

8 So -- so the first time you go through 11:08:36
9 this, right, you're going to have nothing in the 11:08:38
10 subset, and you're going to then do a comparison 11:08:42
11 to put something into the subset, but you're 11:08:45
12 going -- going to go through it again. 11:08:49

13 And what was in that subset from the 11:08:50
14 first time, right, depending on what your 11:08:51
15 comparisons did the first time, is going to 11:08:54
16 affect what's in the subset when you do it for 11:08:57
17 the next motion -- for the next first motion 11:08:59
18 vector prediction vector -- spatial motion vector 11:09:04
19 prediction candidate, sorry. 11:09:08

20 Q. I think I agree with you, that's certainly 11:09:13
21 true in Rusert; that is, the way that you've 11:09:15
22 interpreted Rusert, Doctor, that what will be the 11:09:18

1	subset will be based on prior processing done	11:09:20
2	at -- to the point where you reach the -- the	11:09:25
3	first spatial motion vector prediction candidate.	11:09:28
4	And so to clarify with an example, by	11:09:29
5	the time we reach the -- candidate 3 in RuserT	11:09:32
6	using Figure 3N, we would have done some	11:09:37
7	processing on 1 and 2.	11:09:40
8	And depending on 1 and 2 and whether	11:09:41
9	they're the same or sufficiently similar or	11:09:43
10	available, that's going to help us inform our	11:09:45
11	choice of subset 3.	11:09:48
12	Do you agree with that?	11:09:49
13	A. Oh, for RuserT?	11:09:49
14	Q. Yes.	11:09:51
15	A. Yeah, I agree with that on -- with respect	11:09:51
16	to RuserT.	11:09:53
17	Q. Okay. And to some extent -- now I'm going	11:09:54
18	to refer to the Nakamura reference.	11:09:56
19	That's -- that's also true of the	11:09:58
20	Nakamura reference, where we have S0 and S1; and	11:09:59
21	if we're identifying S1 as the first spatial	11:10:03
22	motion vector prediction candidate, what exists	11:10:06

1	in the subset of S0 will depend on some prior	11:10:08
2	processing before we get to S1 in Nakamura's	11:10:11
3	order.	11:10:14
4	A. I -- I believe it's accurate, yeah. S0	11:10:16
5	will be filled first, yeah, and then -- and	11:10:20
6	then -- and we don't know what's going to be a	11:10:24
7	priori, right?	11:10:27
8	So then you'll -- you'll have --	11:10:28
9	you'll -- you'll evaluate candidates for S1.	11:10:29
10	MR. VERBONCOEUR: I'd like to ask	11:10:34
11	you some more specific questions in Rusert, but	11:10:35
12	we've been going for about another hour, so I	11:10:38
13	could use a quick break.	11:10:41
14	(Break taken from 11:10 a.m. to	11:10:43
15	11:25 a.m.)	11:25:11
16	Q. (BY MR. VERBONCOEUR) Welcome back,	11:25:18
17	Doctor.	11:25:25
18	A. Thank you.	11:25:25
19	Q. All right. So, you know, I -- before you	11:25:26
20	left, I was going to talk to you about the way	11:25:29
21	Rusert works.	11:25:31
22	And -- and you've got Figure 3N	11:25:32

1 annotated below paragraph 130 of your 11:25:36
2 declaration. I think -- I think we can use that, 11:25:38
3 sort of, just to talk through it. 11:25:41

4 And what I'd like to talk about is, 11:25:42
5 like, a -- a scenario where we've got a maximum 11:25:47
6 of five motion vectors that could be in our PMV 11:25:50
7 cans list. 11:25:54

8 Does that make sense to you? 11:25:55

9 MR. LIANG: Objection to form. 11:25:56

10 A. We can talk about any scenario you want; 11:25:58
11 but, of course, Rusert does not -- does not even 11:26:01
12 present an embodiment that has five maximum -- 11:26:05
13 five vector candidate -- vector -- motion vector 11:26:11
14 candidates in its list. 11:26:13

15 Q. (BY MR. VERBONCOEUR) My question may have 11:26:14
16 been imprecise. 11:26:15

17 I -- would you agree that Rusert does 11:26:17
18 describe imposing scan limits? 11:26:20

19 A. Yes, Rusert does -- does -- does present 11:26:21
20 the idea of having a maximum scan limit size. 11:26:25

21 Q. Okay. So let's assume for -- for purposes 11:26:29
22 of talking through Figure 3N, so that we don't 11:26:32

1	have to go through all the examples, that -- that	11:26:36
2	Rusert is using a scan limit of five here.	11:26:39
3	A. Okay.	11:26:41
4	Q. And looking at Figure 3N of Rusert, we	11:26:44
5	would start with a PMV cans list of -- with	11:26:48
6	nothing on it; and then if block 1 was present	11:26:52
7	and had an -- an associated motion vector, then	11:26:55
8	1's motion vector is now added to the PMV cans	11:26:59
9	list?	11:27:05
10	A. That is correct so far, yes.	11:27:05
11	Q. And now what Rusert does, using Figure 3N	11:27:06
12	as an example, is that it looks to block 2; and	11:27:09
13	it needs to process whether to include the motion	11:27:12
14	vector associated with block 2 to the PMV cans	11:27:16
15	list.	11:27:20
16	And -- and to figure that out, it does	11:27:20
17	a comparison between 2 and 1, which is already on	11:27:23
18	the can -- the PMV cans list?	11:27:26
19	A. It will compare -- it will compare -- it	11:27:28
20	will do a -- compare the pairs of 1 and 2, yes.	11:27:32
21	Q. And I believe you noted this in your	11:27:34
22	declaration, but a comparison in Rusert can take	11:27:37

1 a couple of different flavors: For example, it
2 could look to see whether the motion vectors are
3 exactly identical or whether they're just really
4 close.

5 And if it satisfies whichever
6 condition is being used, then it will decide
7 whether to -- you know, whether 2 goes on the
8 list, too, if it's sufficiently different or
9 different from -- from 1.

10 A. That's correct.

11 Rusert will do -- there are three
12 possible comparisons that Rusert proposes that it
13 could do, and two of those you have mentioned.

14 Q. And -- and the third is essentially an
15 efficiency determination -- that is, the third
16 example comparison in Rusert, as you've
17 interpreted, is an efficiency determination
18 that's along the lines of how similar or whether
19 they're the same; but it's -- it's not quite the
20 same.

21 A. The third -- the third comparison is -- is
22 a determination of -- of -- of which -- of

1 whether or not it would have been more -- more 11:28:28
2 efficient bit-wise, right? So it's bit-wise -- 11:28:31
3 bit-wise efficiency, so whether it would require 11:28:34
4 fewer bits to send a candidate that's already on 11:28:37
5 the list with an appropriate update to it versus 11:28:40
6 adding this new candidate to the list. 11:28:47

7 Q. Right. 11:28:49

8 And -- and the bit efficiency 11:28:50
9 determination does in some ways relate to the 11:28:52
10 similarity of the -- the two motion vectors being 11:28:55
11 compared because if -- if they're sufficiently 11:28:58
12 similar, then it doesn't cost very much in the 11:29:00
13 bitstream to include some, let's say, residual 11:29:03
14 information about how to correct the resulting 11:29:06
15 motion vector prediction? 11:29:09

16 A. It is based in -- in -- in -- in -- in 11:29:10
17 some way on similarity, but it's much more 11:29:14
18 complex than that because -- because they could 11:29:17
19 be very different, but it would just so happen 11:29:19
20 that the -- that the update that you'd -- the 11:29:23
21 additional update you'd have to send could be 11:29:26
22 very -- much smaller even though they appear to 11:29:29

1	be very different.	11:29:31
2	Q. Fair enough.	11:29:32
3	That it -- the starting place is how	11:29:33
4	similar is the motion vector that would go on the	11:29:35
5	list in lieu of the new candidate.	11:29:38
6	And then the question is: How many	11:29:43
7	bits is it going to take me to represent that	11:29:44
8	delta?	11:29:48
9	A. Yeah. It's -- it's the -- it's the cost	11:29:48
10	of -- of transmitting the index of the -- the	11:29:50
11	selected motion prediction candidate, which will	11:29:54
12	cost a certain amount, plus the -- as you called	11:29:58
13	it, the delta, the difference between that index	11:30:01
14	and the -- and the -- the actual one.	11:30:03
15	Q. Okay. And -- and so I want to go back to	11:30:06
16	the, sort of, walkthrough of Ruser's Figure 3N	11:30:09
17	that -- that we were doing.	11:30:12
18	And -- and we -- keeping the different	11:30:13
19	forms of the comparisons that you've pointed to	11:30:16
20	in Ruser in mind, we've determined that 1 goes	11:30:18
21	on the list because it's available.	11:30:21
22	Let's say that 2 is sufficiently	11:30:23

1	different from 1, and it's not easy to represent	11:30:25
2	any delta. Then -- then 2 will also go on the	11:30:28
3	list after some comparison of 1 and 2?	11:30:31
4	A. Again, with -- with respect to this --	11:30:36
5	this -- this -- this -- this specific example	11:30:41
6	that we're considering where the maximum list	11:30:47
7	size is equal to 5, so far we would have 1 and 2	11:30:51
8	in the subset.	11:30:55
9	Q. All right. Okay. And now in our	11:30:58
10	scenario, we've got 1 and 2 on the PMV cans list,	11:31:01
11	and we're looking at 3 as a candidate. And	11:31:05
12	that's actually the example that your	11:31:09
13	color-coding highlights in -- in Figure 3N below	11:31:11
14	paragraph 130.	11:31:14
15	And now for purposes of this example,	11:31:15
16	let's imagine that 3 is identical to candidate 2	11:31:17
17	in motion vector.	11:31:23
18	A. Okay. 3 is identical.	11:31:24
19	Q. In that scenario, then, 3 would not be	11:31:25
20	added to the PMV -- PMV cans list based on a	11:31:31
21	comparison with 2.	11:31:35
22	A. That -- that's correct.	11:31:39

1 3 would not be added because it 11:31:39
2 does -- because its motion information duplicates 11:31:42
3 the motion information of 2. 11:31:45

4 Q. And now if we're following the scan order 11:31:47
5 identified in Figure 3N of Rusert, we've 11:31:50
6 determined not to include number 3 on the PMV 11:31:55
7 cans list, and now we're processing candidate 4. 11:31:58

8 A. Okay. Yes. 11:32:02

9 Again, given -- given that we've 11:32:02
10 decided in this particular example to select the 11:32:05
11 maximum number of candidates equal to five, 11:32:09
12 there's still room on the PMV cans list, if you 11:32:12
13 will, then -- within the variable, so we would 11:32:18
14 consider 4 at this point. 11:32:21

15 Q. Okay. And so -- and 4, when it's a 11:32:22
16 candidate, is going to be compared to numbers 1 11:32:27
17 and 2 because 3 wasn't on the list. So we're 11:32:30
18 going to do a comparison of 4 to 2 and 4 to 1? 11:32:34

19 A. Yes. We would -- we would now compare 4 11:32:37
20 and the P -- so the PMV cans variable is now 11:32:41
21 storing information, motion and -- and other 11:32:46
22 information, with respect to 1 and 2. 11:32:49

1 So we would compare the motion 11:32:51
2 information of 4 with the motion information of 2 11:32:54
3 and 1, as well as, you know, the -- the -- the 11:33:00
4 third comparison we were talking about, which is 11:33:01
5 with respect to coding efficiency. 11:33:04

6 Q. And let's assume that 4 is sufficiently 11:33:06
7 different from 1 and 2, that it -- it passes all 11:33:09
8 those comparisons. 11:33:11

9 And -- and you'd agree with me in that 11:33:12
10 scenario, then, 4 is going to be added to our PMV 11:33:15
11 cans list so that we get 1, 2, and 4? 11:33:19

12 A. The PMV cans variable should now include 11:33:20
13 information related to motion vectors in blocks 11:33:23
14 1, 2, and 4. 11:33:26

15 Q. Okay. Okay. And so now, since our scan 11:33:28
16 limit was five, we're going to look at block 5; 11:33:32
17 and now block 5 is going to be compared to 1, 2, 11:33:34
18 and 4? 11:33:37

19 A. Yeah. Our -- our scan, like -- as you 11:33:39
20 say, our -- our scan limit is five; and at this 11:33:42
21 point, we -- and by the way, the -- the scan 11:33:45
22 limit -- it's -- Rusert does not propose a scan 11:33:48

1	limit. What Rusert proposes is a maximum PMV	11:33:51
2	list size, right?	11:33:54
3	So at this point, we have 4, 2, and 1,	11:33:56
4	in your hypothetical, in our list; so we will	11:34:00
5	compare -- so we have -- we have three -- three	11:34:04
6	motion vector locations in our list. We will now	11:34:10
7	compare 5 to 4, 2, and 1.	11:34:15
8	Q. Okay. Thank you.	11:34:18
9	And so in this example, when we're	11:34:20
10	processing 5, the 5, under your interpretation of	11:34:24
11	Rusert, could qualify as a first spatial motion	11:34:30
12	vector prediction candidate?	11:34:35
13	A. Absolutely.	11:34:35
14	Q. And the subset in this example would be 1,	11:34:36
15	2, and 4 that you would contend is determined	11:34:39
16	based on 5's location?	11:34:43
17	A. Absolutely.	11:34:44
18	I mean, all we have to do is -- is	11:34:45
19	look at the spatial locations. 2 is directly	11:34:47
20	above 5. 4 is directly above 2. And then 1 is	11:34:51
21	two above and one to the right of 5.	11:34:59
22	Q. All right. And -- and so let's go back to	11:35:05

1	block 3.	11:35:08
2	And so when we were processing block	11:35:09
3	3, that would also qualify as a -- a first	11:35:12
4	spatial motion vector prediction candidate, you	11:35:14
5	know, at a different point in time in -- in	11:35:16
6	Rusert's scan process?	11:35:18
7	A. At that point in the processing, block 3	11:35:19
8	qualifies as a first spatial motion vector	11:35:21
9	prediction candidate.	11:35:25
10	Q. And then the subset to which block 3 is	11:35:25
11	compared is going to be 1 and 2?	11:35:28
12	A. That is correct.	11:35:32
13	Block 3 -- in terms of Rusert's	11:35:33
14	realization, 1 and 2 information -- the -- the	11:35:36
15	information -- motion vector information	11:35:41
16	regarding -- related to block 1 and 2 will be in	11:35:44
17	the PMV cans list.	11:35:47
18	And that will constitute the subset to	11:35:49
19	which block 3, which would be the first spatial	11:35:52
20	motion vector prediction candidate, is compared	11:35:56
21	to.	11:35:56
22	Q. And then for block 4, in the scenario	11:35:57

1 where block 3 is not added to the list -- you 11:36:02
2 know, it's sufficiently similar or it's not 11:36:05
3 available, what have you, then block 4 is 11:36:06
4 compared to 1 and 2? 11:36:10

5 A. So block 4 in this case is now our first 11:36:14
6 spatial motion vector prediction candidate. PMV 11:36:17
7 cans contains our -- our dynamic random variable 11:36:20
8 that we're using to track the subset, contains, 11:36:25
9 as its subset, motion information report -- 11:36:27
10 motion information related to blocks 1 and 2. 11:36:31

11 And, of course, we see that relative 11:36:34
12 to the first motion vector prediction candidate, 11:36:36
13 block 4, block 1 is spatially located one to the 11:36:40
14 right and block 2 is located one below. 11:36:44

15 Q. I think you used the phrase "dynamic 11:36:53
16 random variable." 11:36:57

17 Can you explain what that term means 11:36:58
18 as a technical matter? 11:37:01

19 A. It just means that it's -- it's changing, 11:37:02
20 so it's -- it's being updated. Each time we go 11:37:04
21 through this process, we are updating the 11:37:07
22 contents of this. 11:37:10

1 So -- so the -- the subset is being 11:37:11
2 stored in this dynamic random variable as we go 11:37:13
3 through this process; and when the process is 11:37:18
4 complete, the results that -- what's held in PMV 11:37:20
5 cans is going to be the list of prediction 11:37:23
6 candidates. 11:37:27

7 Q. Okay. Thanks. 11:37:27

8 MR. VERBONCOEUR: I'd like to 11:37:28
9 introduce another exhibit here. I think we're up 11:37:30
10 to Exhibit 6. 11:37:30

11 THE COURT REPORTER: Yes, we are. 11:37:30

12 Mr. VERBONCOEUR: Thank you. 11:37:31

13 (Whereupon Exhibit Number 6 was 11:37:31
14 marked for identification.) 11:37:32

15 (Discussion off the record.) 11:38:05

16 Q. (BY MR. VERBONCOEUR) So, Doctor, what's 11:38:05
17 been marked as Exhibit 6 is a presentation 11:38:06
18 associated with someone named Hiroya Nakamura. 11:38:10

19 Do you have Exhibit 6 in front of you? 11:38:14

20 A. I do. 11:38:16

21 Q. And do you recognize this document? 11:38:17

22 A. Yes, I do recognize it. 11:38:21

1 Q. What is Exhibit 6? 11:38:22

2 A. Exhibit 6 is one part of a -- what you 11:38:24
3 could call a compound reference, the way we've -- 11:38:28
4 the way we've referred to it, with respect to a 11:38:31
5 proposal by Nakamura for the H.265 standard. 11:38:36

6 So there are two other parts to this, 11:38:42
7 as well, but this is -- this presentation is one 11:38:45
8 part of that. 11:38:46

9 Q. Okay. And -- and if you look at the first 11:38:47
10 page of Exhibit 6, there's something that says 11:38:49
11 "JCTVC-F419." 11:38:53

12 A. Yes, I see that. 11:38:59

13 Q. And do you agree that "JCTVC" is referring 11:38:59
14 to the team of video engineers that were working 11:39:04
15 on the -- the draft H.265 standard? 11:39:06

16 A. It is -- it is definitely -- it is the 11:39:09
17 committee that was -- that was developing the 11:39:12
18 H.265 standard. I don't know that "team of video 11:39:14
19 engineers" is necessarily -- but it was the 11:39:18
20 committee that did that. 11:39:20

21 Q. Would you at least agree the "T" in this 11:39:21
22 acronym stands for "team"? 11:39:25

1	A. Oh, absolutely.	11:39:26
2	Q. Okay.	11:39:26
3	A. But I -- it's the "video engineers"	11:39:27
4	part --	11:39:28
5	Q. Okay.	11:39:28
6	A. -- that I have a problem with.	11:39:29
7	Q. But it -- it's a team of -- of	11:39:30
8	knowledgeable individuals who were working on	11:39:30
9	developing the H.265 standard?	11:39:33
10	A. That is a better characterization.	11:39:35
11	Q. Okay. Yeah. Maybe there's some ambiguity	11:39:36
12	as to what a video engineer is.	11:39:40
13	A. I'm thinking of somebody who runs the TV	11:39:41
14	station or something.	11:39:44
15	Q. Yeah. Okay.	11:39:45
16	And -- and are -- are you familiar,	11:39:46
17	Doctor, that -- that Nokia also submitted a merge	11:39:48
18	mode contribution associated with the H.265	11:39:53
19	standard?	11:39:56
20	A. No, I -- I'm actually not. I -- I'm not	11:39:57
21	familiar with Nokia's contribution, and I haven't	11:39:59
22	reviewed that.	11:40:03

1 Q. Okay. I -- I'd like to look at Page 7 of 11:40:04
2 Exhibit 6, of the Nakamura presentation. 11:40:07

3 A. Okay. 11:40:15

4 Q. And if you -- if you need to see the other 11:40:15
5 Nakamura -- the documents that Nakamura provided, 11:40:20
6 the standard, let me know; but maybe we can 11:40:23
7 simplify this. 11:40:27

8 Would you agree that the diagram shown 11:40:28
9 here on Page 7 of Exhibit 6 is consistent with 11:40:30
10 Nakamura's contribution or proposal to the 11:40:33
11 standard as far as the -- the check order and the 11:40:36
12 candidates, et cetera? 11:40:39

13 A. I would say that this -- this diagram, 11:40:42
14 while not -- while it certainly does not describe 11:40:46
15 all of Nakamura's proposed contribution, does 11:40:49
16 show -- it shows the -- the order in which you 11:40:54
17 check neighboring motion -- neighboring blocks 11:40:57
18 for their motion vectors. 11:41:03

19 And it -- it does illustrate the -- it 11:41:05
20 shows -- it shows what the name -- the -- it also 11:41:10
21 shows the locations of those neighboring blocks 11:41:12
22 relative to the current block, and it also 11:41:14

1 indicates this S -- first candidate, S0, second 11:41:18
2 candidate, S1, though it -- it doesn't really -- 11:41:23
3 we -- just by looking at this, I don't think you 11:41:27
4 would -- you would glean exactly what S0 and S1 11:41:30
5 actually mean. 11:41:34

6 Q. That's fair. 11:41:39

7 And if you look at Page 9 of 11:41:39
8 Exhibit 6, there's a -- a table comparing HM3.0 11:41:42
9 and proposed technique for merge mode. 11:41:49

10 A. I am looking at the table. 11:41:51

11 Q. Do you know what HM3.0 refers to on Page 9 11:41:53
12 of Exhibit 6? 11:41:59

13 A. Yeah. It was one of the -- it was -- it 11:41:59
14 was -- at the time Nakamura made this proposal, 11:42:02
15 it was the current test model for the -- for the 11:42:05
16 standard that was being developed that ultimately 11:42:14
17 became H.265/HEVC. 11:42:16

18 Q. Okay. And on Page 9 of Exhibit 6, the 11:42:21
19 Nakamura presentation, can you tell me what you 11:42:25
20 identified as the set of spatial motion vector 11:42:30
21 prediction candidates for an encoded block of 11:42:36
22 pixels corresponding to the '714 patent's claims? 11:42:38

1	A. Well, it -- the -- you're saying can I	11:42:42
2	identify it on Page 9?	11:42:46
3	Q. Or -- or anywhere in -- in Exhibit 6.	11:42:47
4	A. The -- the set of spacial -- the set of	11:42:53
5	spatial motion vector prediction candidates	11:42:57
6	with -- with respect to -- to, you know, the '714	11:42:59
7	patent, would be, in my opinion, A, B, C, D, and	11:43:05
8	E.	11:43:11
9	Q. Okay. And if we go back to Page 7, so	11:43:12
10	that we have a reference, of Exhibit 6, the	11:43:22
11	Nakamura presentation, what you identify as the	11:43:24
12	candidates A, B, C, D, and E are -- are checked	11:43:27
13	in order, in -- in alphabetic order?	11:43:31
14	A. In the case of merge mode, that's --	11:43:38
15	that's clearly the case, A, B, C, D, E.	11:43:40
16	Q. And the reason you believe Nakamura meets	11:43:42
17	the limitation, without making a comparison of	11:43:52
18	each possible candidate pair from the set of	11:43:55
19	spatial motion vector prediction candidates, is	11:43:59
20	that if S1 and S1 are compared to one another,	11:43:59
21	that's -- that's not a -- a comparison of all	11:44:04
22	possible permutations of -- of the five	11:44:06

1	candidates you've identified?	11:44:08
2	A. That's correct.	11:44:10
3	All -- all that Nakamura's doing	11:44:11
4	is it's simply looking to see if there's any	11:44:16
5	spatial motion vector prediction information	11:44:21
6	available, and it simply -- if there is, the	11:44:24
7	first one where there's something available, it	11:44:27
8	puts it into -- into S0; second one where	11:44:30
9	something's available, it puts it into S1; and	11:44:34
10	then the comparisons it does are relative to S1,	11:44:37
11	S0, and the temporal -- and a temporal motion	11:44:41
12	vector prediction candidate.	11:44:46
13	Q. All right. And -- and, I mean, looking at	11:44:46
14	Nakamura on -- on Page 7 of Exhibit 6, one reason	11:45:17
15	that's shown here in Nakamura's example that a	11:45:23
16	candidate might not be available as a spatial	11:45:27
17	motion vector prediction candidate is -- is	11:45:30
18	that -- if it's associated with an "intra" block?	11:45:30
19	A. That's correct.	11:45:35
20	Q. And then another example given where -- in	11:45:36
21	Nakamura's example on Page 7 of Exhibit 6 a	11:45:41
22	candidate's not available is if it's just not	11:45:46

1	present, and that's -- that's shown with the	11:45:48
2	example of the block labeled "C"?	11:45:51
3	A. I believe that would be the case where	11:45:53
4	possibly it has not been processed yet, so they	11:45:55
5	don't have any motion information available.	11:45:57
6	Q. And do you agree that it would also be	11:45:59
7	a -- a possible scenario shown on Page 7 of	11:46:02
8	Exhibit 6 where if, for example, the -- the	11:46:06
9	current block shown on that page was at the very	11:46:07
10	right side of the frame so that the -- the block	11:46:10
11	labeled "C" is just not present?	11:46:13
12	A. That could be the case that -- that	11:46:17
13	they're talking about here, right?	11:46:20
14	This could -- that could -- it could	11:46:21
15	be all the way to the right side of the frame;	11:46:22
16	and that could be why C is not present, not	11:46:25
17	available.	11:46:27
18	Q. Right.	11:46:27
19	And -- and likewise, you would have a	11:46:28
20	situation where A, D, and E are -- are not	11:46:29
21	available if the current block was all the way to	11:46:32
22	the left side of the frame?	11:46:36

1	A. Certainly.	11:46:36
2	If it were in the upper -- upper	11:46:37
3	left-hand corner, then A, D, E, and B would not	11:46:39
4	be available.	11:46:42
5	Q. And --	11:46:42
6	A. And C. None of them would be available.	11:46:44
7	Q. I -- I apologize for talking over you.	11:46:46
8	A. So...	11:46:49
9	Q. I mean -- and -- and -- and I think a	11:46:50
10	person of skill in the art would understand	11:46:53
11	that -- that frames are of finite sizes; and so	11:46:54
12	if -- if your current block is on the far edge	11:46:57
13	at, you know, either left or right of the frame,	11:46:59
14	you're going to have some neighbors that just	11:47:01
15	aren't present?	11:47:04
16	A. A person of ordinary -- a person of	11:47:05
17	ordinary skill in the art would certainly	11:47:07
18	understand that; but, of course, they would also	11:47:08
19	understand there could be other reasons why a	11:47:11
20	block isn't available, depending upon the scan	11:47:13
21	order.	11:47:17
22	Q. Yeah.	11:47:17

1	It -- it could be that it's an "intra"	11:47:18
2	block, it could be it's not processed yet, or it	11:47:24
3	could be that --	
4	THE COURT REPORTER: It could be	
5	the what block?	
6	MR. VERBONCOEUR: Intra,	
7	I-N-T-R-A, block.	
8	Q. (BY MR. VERBONCOEUR) It could be that	
9	it's not -- there's no motion vector associated	11:47:28
10	with it or -- or you're on one end of the frame	11:47:30
11	or the other?	11:47:33
12	A. Yes.	11:47:33
13	There are -- there are a number of	11:47:34
14	reasons why a block could not be available, and a	11:47:35
15	person of ordinary skill in the art would	11:47:38
16	certainly understand that.	11:47:41
17	Q. And, you know, as -- as it relates to --	11:47:42
18	to Ruser, I mean, the same availability query is	11:47:45
19	true in Ruser's process; that is, if you're at	11:47:49
20	the far end of the frame, some numbers in the	11:47:52
21	scan order aren't going to be available?	11:47:55
22	A. You -- you can only use -- for -- for	11:47:59

1 spatial prediction, right; so we're talking about 11:48:03
2 using spatial motion prediction. In other words, 11:48:05
3 we're only -- talking about only using 11:48:09
4 information from within the current frame. 11:48:10

5 You can only use, for prediction, 11:48:12
6 previously -- motion vectors corresponding to 11:48:15
7 previous blocks. 11:48:19

8 So if there are no previous blocks, in 11:48:19
9 an extreme case, if you're in the upper left-hand 11:48:22
10 corner, there are no previously-encoded blocks, 11:48:25
11 you simply -- you -- you have nothing to use for 11:48:28
12 a spatial motion vector prediction from that 11:48:30
13 frame. So there's simply nothing you can do 11:48:33
14 about that. 11:48:36

15 Q. Right. 11:48:36

16 That's -- I mean, yeah. I think -- I 11:48:37
17 think -- I think you've covered it. That's -- 11:48:38
18 that's -- that's just a facet of video coding 11:48:39
19 that's true of both Ruser and Nakamura? 11:48:41

20 A. Yeah. 11:48:44

21 MR. VERBONCOEUR: Okay. I -- I 11:48:48
22 may be able to wrap up, so I'd like to take a -- 11:48:49

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1	a quick break and just make sure I've got no	11:48:52
2	further questions.	11:48:55
3	MR. LIANG: Okay.	11:48:56
4	(Break taken from 11:48 a.m. to	11:48:58
5	11:54 a.m.)	11:54:24
6	MR. VERBONCOEUR: All right. No	11:54:27
7	further questions.	11:54:27
8	Thank you for your time, Doctor.	11:54:28
9	THE WITNESS: Thank you.	11:54:29
10	MR. LIANG: Nothing further from	11:54:35
11	me. Nothing from me.	11:54:36
12	THE COURT REPORTER: Okay. All	11:54:40
13	righty. Anything else for the record?	11:54:41
14	MR. LIANG: Not from me.	11:54:43
15	MR. VERBONCOEUR: No.	11:54:44
16	(Deposition concluded.)	
17	* * * * *	
18		
19		
20		
21		
22		

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1 I, CHARLES D. CREUSERE, have read the
2 foregoing deposition and hereby affix my
3 signature that same is true and correct, except
4 as noted above.

5 _____
6 CHARLES D. CREUSERE

7 THE STATE OF _____)
8 COUNTY OF _____)

9 Before me, _____, on
10 this day personally appeared CHARLES D. CREUSERE,
11 known to me (or proved to me under oath or
12 through _____) (description
13 of identity card or other document) to be the
14 person whose name is subscribed to the foregoing
15 instrument and acknowledged to me that they
16 executed the same for the purposes and
17 consideration therein expressed.

18 Given under my hand and seal of office this
19 _____ day of _____,
20 _____.

21 _____
22 NOTARY PUBLIC IN AND FOR
THE STATE OF _____
COMMISSION EXPIRES: _____

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

3 AMAZON.COM, INC.,)
4 AMAZON.COM SERVICES)
5 LLC,) CASE NO.:
6) IPR2024-00604
7 Petitioner,)
8) U.S. Patent No.
9 VS.) 10,536,714
10)
11 NOKIA TECHNOLOGIES OY,)
12)
13 Patent Owner.)

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

16 AMAZON.COM, INC.,)
17 AMAZON.COM SERVICES)
18 LLC,)
19) CASE NO.:
20 Petitioner,) IPR2024-00605
21)
22 VS.) U.S. Patent No.
) 10,536,714
NOKIA TECHNOLOGIES OY,)
)
Patent Owner.)

REPORTER'S CERTIFICATION
DEPOSITION OF CHARLES D. CREUSERE
JANUARY 20, 2025

I, Annette Peltier, Certified Shorthand
Reporter in and for the State of Texas, hereby
certify to the following:
That the witness, CHARLES D. CREUSERE, was

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Nokia Exhibit 2010, p. 130
Amazon.com v. Nokia
IPR2024-01505

1 duly sworn by the officer and that the transcript
2 of the oral deposition is a true record of the
3 testimony given by the witness;

4 That the original deposition was delivered to
5 Mr. Mitch Verboncoeur, Custodial Attorney.

6 I further certify that the signature of the
7 deponent:

8 _____ was requested by the deponent or a party
9 before the completion of the deposition and that
10 signature is to be returned within 30 days from
11 the date of receipt of the transcript. If
12 returned, the attached changes and signature page
13 contains any changes and the reasons therefore.

14 XXX was not requested by the deponent or
15 party before the completion of the deposition.

16 I further certify that I am neither counsel
17 for, related to, nor employed by any of the
18 parties or attorneys in the action in which this
19 testimony was taken. Further, I am not a
20 relative or employee of any attorney of record in
21 this cause, nor am I financially or otherwise
22 interested in the outcome of the action.

1 Certified to by me this 26th day of January,
2 2025.

3
4 
5 Annette Peltier, Texas CSR 3253
6 Expiration Date: 10/31/25
7 Firm Registration No. 686
8 451 Hungerford Drive
9 Suite 400
10 Rockville, MD 20850
11 Phone: 888.433.3767
12 Fax: 888.503.3767
13
14
15
16
17
18
19
20
21
22

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Conducted on January 20, 2025

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