

1 UNITED STATES PATENT AND TRADEMARK OFFICE

2
3 BEFORE THE PATENT TRIAL AND APPEAL BOARD
4

5
6 fuboTV MEDIA, INC., and YANKA INDUSTRIES

7 Petitioners

8 v.

9 DISH TECHNOLOGIES LLC

10 Patent Owner

11
12 IPR2024-00917

13 Patent 10,757,156 B2
14

15 DEPOSITION of HENRY HOUH, PhD

16 Wednesday, July 16, 2025 - 9:12 a.m.

17 Latham & Watkins, LLP

18 200 Clarendon Street

19 Boston, Massachusetts
20

21
22 Reporter: Jill K. Ruggieri, RPR, RMR, FCRR, CRR

23 Job No. CS7474828
24
25

1 APPEARANCES:

2
3 Baker Botts LLP

4 Eliot D. Williams, Esq.

5 Andrew Wilson, Esq.

6 700 K Street, N.W.

7 Washington, DC 20001-5692

8 202.639.7700

9 eliot.williams@bakerbotts.com

10 andrew.wilson@bakerbotts.com

11 Counsel for Dish Technologies LLC

12
13 Latham Watkins, LLP

14 Ashley Finger, Esq.

15 Inge A. Osman, Esq.

16 555 Eleventh Street, NW, Suite 1000

17 Washington, D.C., 20004

18 202.637.2200

19 ashley.finger@lw.com

20 inge.osman@lw.com

21 Counsel for fuboTV Media, Inc.

Venable LLP

Parker G. Zimmerman, Esq.

151 West 42nd Street

New York, New York 10036

212.307.5500

pgzimmerman@venable.com

Counsel for Yanka Industries

Also present (via Zoom): Christoper Hong, Esq.

James Hanft, In-house counsel for DISH

Jamie R. Lynn, Esq.

Joseph Edell, DISH Network

Philip Sheng, Esq.

Unidentified "Zoom user"

1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
17
18
19
20
21
22
23
24
25

I N D E X

WITNESS:

HENRY H. HOUH

Examination by Mr. Williams 5

E X H I B I T S

Exhibit 2200 Declaration of Dr. Henry H. 148
Houh in Support of Petition
for Inter Partes Review of
US Patent No. 7,166,062

1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
17
18
19
20
21
22
23
24
25

P R O C E E D I N G S

HENRY H. HOUH, PhD, a witness
having been duly sworn, on oath deposes and
says as follows:

EXAMINATION

BY MR. WILLIAMS:

Q Good morning.

A Good morning.

Q Would you state your full name for
me?

A My name is Henry H. Houh. That's
spelled H-O-U-H.

Q Thank you.
You have a binder in front of
you there.

Do you see that?

A Yes.

Q Open it to -- should be a tab number
10 in there.

A I don't have a Tab 10.

Q Okay. Why don't you -- yeah, it's
going to be Tab 4. Tab 4.

A Okay.

1 Q Do you recognize this document?

2 A Yes, I do.

3 Q What is it?

4 A This is a supplemental declaration of
5 mine in case 2024 ending in 917, 918 and 919.

6 Q And those are IPR proceedings that
7 correspond to the patent numbers ending in
8 '156, '564 and '772; is that correct?

9 A I think that's right, yes.

10 Q Okay.

11 And is that your signature on
12 the last page?

13 A Yes, it is.

14 Q That's -- the last page is 140,
15 correct, on this document?

16 A Yes.

17 Q Okay.

18 And it's been labeled as
19 Exhibit 1026 on the bottom; is that right?

20 A Yes.

21 Q Okay.

22 Now, your signature's on
23 page 140, but the text actually begins on
24 page -- a different page number. Let's see.
25 Begins on page 3, I believe. Is that -- I'm

1 sorry, page 4; is that correct?

2 A Yes, that's right. The table of
3 contents have romanette numbers, but they're --
4 it would be just one, two, three, and it's --
5 page 4 is where the introduction and
6 qualifications start.

7 Q Okay.

8 And in preparation for today's
9 deposition, have you had a chance to review
10 this document previously?

11 MS. FINGER: Objection.
12 Privilege. I instruct the witness not to
13 answer.

14 MR. WILLIAMS: You're
15 instructing him not to answer whether he
16 reviewed the document?

17 MS. FINGER: To the extent it's
18 getting to the contents of the preparation,
19 yes.

20 MR. WILLIAMS: To the extent
21 it's getting into the contents of preparation.

22 Well, I didn't ask him if you
23 asked him to review the document. I asked if
24 he reviewed the document. Do you still want to
25 instruct him --

1 MS. FINGER: The objection
2 stands.

3 MR. WILLIAMS: Let's go off the
4 record.

5 (Discussion off the record.)

6 MR. WILLIAMS: Can you reread
7 the question to the witness.

8 (Record read as requested.)

9 MS. FINGER: Same objection.

10 MR. WILLIAMS: You can object.
11 That's fine.

12 But are you instructing the
13 witness not to answer?

14 MS. FINGER: Yes.

15 MR. WILLIAMS: Okay. Let's call
16 the board. We can go off the record.

17 (Discussion off the record.)

18 BY MR. WILLIAMS:

19 Q Okay.

20 Without revealing any
21 attorney-client communications, can you tell me
22 if you reviewed this document in preparation
23 for today's deposition?

24 A Yes, I did.

25 Q Okay. Great.

1 Do you stand by the testimony in
2 this document?

3 MS. FINGER: Object to form.

4 A Yes, I do.

5 Q Okay.

6 And there is no changes that you
7 wanted to make after preparing -- after
8 reviewing this document, correct?

9 A I did see a typo at one point, a
10 citation had some line numbers that didn't make
11 sense, but I think the citation was some
12 column, lines 25 to 20, or something like that,
13 and I think it should have been 25 to 30.

14 Q Okay.

15 You don't recall particularly
16 which citation you're talking about, do you?

17 A I can look.

18 Q It doesn't matter. That's fine.

19 Other than the citation that you
20 mentioned, everything else you stand by?

21 A I stand by my opinions in this
22 report.

23 Q Okay.

24 A And I did see that typo when
25 reviewing it.

1 Q Okay. Thank you for that.

2 Let's look at paragraph 2.

3 Okay. So this declaration, it
4 covers actually three different IPR
5 proceedings, the ones you identified
6 previously, correct?

7 A Sorry, could you repeat the question,
8 please?

9 Q Yes.

10 This declaration covers all --
11 covers all three of the IPR proceedings that
12 you mentioned, that are listed on the first
13 page of the declaration?

14 A It does, because it's responsive to
15 Dr. Jeffay, where he addresses all three
16 proceedings in a single declaration.

17 Q Okay.

18 And the citations that you used
19 to Exhibit 1001 in this declaration you say
20 here were to the '772 patent, correct?

21 A Yes, that's what I say here. That's
22 right.

23 Q Okay.

24 But as you say here, those
25 citations would apply equally to the '156 and

1 '564?

2 A They would, to the extent that it's
3 the same citation, but might have a slightly
4 different line number on the other patents.
5 Sometimes that happens.

6 Q Okay. I understand.

7 So what you're saying then is
8 when you're citing to the content of the '772
9 patent in this declaration, there's some
10 equivalent content in these other two patents;
11 is that correct?

12 MS. FINGER: Object to form.

13 A Yes. There would be the same --
14 because the specifications are shared, there
15 would be the same cited passage in the other
16 patents, the '156 and '564, but they might not
17 always be the same line number.

18 Q Okay.

19 If you turn to paragraph 7, you
20 have a list of documents you reviewed, correct?

21 (The deponent read the
22 document.)

23 A I do say that I reviewed the
24 documents cited in this declaration, and then
25 the following -- it goes on for many pages

1 until page 19.

2 Q Okay.

3 And that list of -- that list of
4 documents ends with Exhibit 1060; is that
5 right?

6 A Sorry, I'm not sure I -- it begins
7 with 1060? I don't see --

8 Q No, I said it ends with 1060.

9 A On page 19, the last item in the
10 table is Exhibit 1060, but that's to the -- to
11 the '156 patent matter, which is the matter
12 ending in 917.

13 Q Okay.

14 And then -- all right, we can do
15 each of them individually.

16 With respect to the '772, what
17 was the last exhibit number you listed there?

18 A On page 10, the table that is with
19 respect to the '772 patent, the matter ending
20 in 919, the last exhibit is 1060.

21 Q Okay.

22 And that's the last exhibit
23 number in all of the tables here on this
24 paragraph, correct?

25 A Yes, that's right.

1 Q And Exhibit 1044 is not listed in any
2 of the tables; is that right?

3 A Yes, that's right.

4 Q Did you select the documents that you
5 were going to review for this declaration?

6 MS. FINGER: Objection,
7 privilege. I instruct the witness not to
8 answer.

9 MR. WILLIAMS: You're
10 instructing him not to say whether he selected
11 the documents; is that right?

12 MS. FINGER: To the extent it
13 gets to attorney-client communications, yes.

14 BY MR. WILLIAMS:

15 Q Okay.

16 Without telling me what the
17 lawyers may have said to you, did you select
18 the exhibits that are listed here in this
19 paragraph?

20 MS. FINGER: Same objection, and
21 I instruct the witness not to answer.

22 MR. WILLIAMS: You're
23 instructing him not to answer even though I'm
24 telling him not to give me any privileged
25 information? You're still instructing him not

1 to answer?

2 MS. FINGER: Correct.

3 MR. WILLIAMS: Okay. Let's go
4 off the record.

5 (Discussion off the record.)

6 BY MR. WILLIAMS:

7 Q Okay.

8 Let me show you what's been
9 previously marked as Exhibit 1044.

10 So this is -- I think we just
11 saw this is not a document you listed. Is this
12 a document that you've reviewed before?

13 (The deponent read the
14 document.)

15 A I mean, I've seen documents that may
16 look like this, but I don't -- I don't -- I
17 don't think I've reviewed this for these cases.

18 Q Okay.

19 In preparing your opinion, did
20 you consider the opinion of any foreign
21 tribunals regarding patents in the same family
22 as the ones you opined on in this case?

23 MS. FINGER: Object to form.

24 A Sorry, could you repeat the question,
25 please?

1 Q Sure.

2 In preparing your opinion, did
3 you consider the opinions of any foreign
4 tribunals relating to patents in the same
5 family as the ones you were opining on in this
6 case?

7 MS. FINGER: Object to form.

8 A The question was about whether I
9 considered the opinions of foreign tribunals?

10 Q Yes.

11 A I don't think I see that any of these
12 that I'm looking at in these tables now are --
13 are in that category.

14 Q Right.

15 And I'm just asking, outside of
16 that table, did you consider any foreign
17 tribunal opinions?

18 MS. FINGER: Object to form.

19 A I don't recall discussing anything
20 about that in my supplemental declaration.

21 Q Okay.

22 And other than in your
23 supplemental declaration, did you consider the
24 opinions at all?

25 MS. FINGER: Object to form.

1 (The deponent read the
2 document.)

3 A I don't see any document in that
4 category listed in my materials considered for
5 any of my four opening declarations either.

6 Q Are the materials considered lists in
7 your declarations then the complete list of
8 documents that you've considered in preparing
9 your opinions in this case?

10 MS. FINGER: Object to form.

11 A I think they should be to the extent
12 that any -- all the cited documents in the body
13 of the report also are in that table.

14 Q Okay.

15 So you're saying it's possible
16 there was a cited document that's not in the
17 table but that would be one you also
18 considered; is that correct?

19 MS. FINGER: Object to form.

20 A I would also consider anything I
21 cited in the body, but I hope they all made it
22 into the table at the end of time.

23 Q Okay.

24 But it's fair to say that
25 collectively, the documents in the table and

1 any other documents which you've cited in your
2 declarations is the entire universe of the
3 materials you considered in preparing your
4 opinions in this case, correct?

5 MS. FINGER: Object to form.

6 A In terms of the printed documents.
7 You know, I rely on my own expertise and
8 experience.

9 Q Okay.

10 Going to paragraph 27 of your
11 supplemental declaration.

12 A Okay.

13 Q You're describing here the
14 specification of the '772 patent, correct?

15 (The deponent read the
16 document.)

17 A Yeah, I am describing the shared
18 specification, and I got citations to the '772
19 patent.

20 Q You state in this paragraph that --
21 well, actually, let's just back up to the prior
22 paragraph, 26.

23 Do you see that paragraph?

24 A Yes.

25 Q The last sentence of that paragraph

1 says that the upshifting and downshifting
2 determination does not depend directly on the
3 user's network connection.

4 MS. FINGER: Object to form.

5 Q Is that right?

6 (The deponent read the
7 document.)

8 A What I say here is that, "While I
9 agree that the patents describe upshifting and
10 downshifting quality, (1) the determination
11 does not depend directly on the user's network
12 connection and (2) step 610 in Figure 6 is
13 unrelated."

14 Q Okay.

15 So what do you mean by it "does
16 not depend directly on the user's network
17 connection"?

18 (The deponent read the
19 document.)

20 A So what I'm -- what I mean there is
21 that -- and this is what I explain in
22 paragraph 27 -- that "the shared specification
23 describes that upshifting and downshifting is
24 determined based on a 'performance factor'
25 where the determination of whether the 'higher

1 quality playback can be sustained' is based on
2 a 'combination of factors,' including 'amount
3 of contiguously available streamlets stored in
4 the staging module, a minimum safety margin,
5 and current read ahead margin' -- not directly
6 in response to network conditions."

7 And I cite to Exhibit 1001,
8 which says, in part, "The policy determination
9 about whether or not to upshift 710 playback
10 quality begins by comparing phicurrent with a
11 trigger threshold thetaup. In one embodiment,
12 the trigger threshold thetaup is determined by
13 a combination of factors relating to the
14 current read ahead margin (i.e. the amount of
15 contiguously available streamlets that have
16 been sequentially arranged by the staging
17 module 409 for presentation at the current
18 playback time index), and a minimum safety
19 margin."

20 And then, "The specification
21 explains that this performance factor can be
22 calculated as a geometric mean (or some other
23 averaging) based on a performance ratio, which
24 in turn accounts for 'network behavioral
25 characteristics' derived from a number of

1 samples."

2 And not -- there, I'm explaining
3 what the specification is talking about when it
4 uses this performance factor for determining
5 whether a trigger threshold is met and what
6 goes into that trigger threshold.

7 And it describes that as -- as
8 what I've said here.

9 Q So the words "network behavioral
10 characteristics" are in quotation marks in your
11 declaration.

12 Is that because you're quoting
13 from the specification there?

14 MS. FINGER: Object to form.

15 A Could I take a look at the '772
16 patent, please?

17 Q Yes. Just give me a second.

18 (Pause.)

19 BY MR. WILLIAMS:

20 Q Okay.

21 I'm handing you what was
22 previously marked as Exhibit 1001.

23 Is that the document you wanted
24 to see?

25 A Yes, it is, and I think there's an

1 Exhibit 1001 to all the matters, but I think
2 this is for the matter for the '772 patent.

3 MS. OSMAN: Andrew, do you have
4 a copy for me, please?

5 MR. WILSON: Yes.

6 MS. OSMAN: Thank you.

7 A So, yes, if you look at column 12 in
8 Exhibit 1001 to the '772 -- which is the '772
9 patent -- if you look at line 15, which I've
10 cited at the end of paragraph 27, it does use
11 the phrase "network behavioral
12 characteristics," and that's what I have in
13 quote marks in my paragraph.

14 So it does come directly from --
15 from the '772 patent specification.

16 Q So this -- when you say that, in
17 paragraph 27, that -- you have the very last
18 clause, "which in turn accounts for network
19 behavioral characteristics," do you see that?

20 A Yes.

21 Q So what are you referring to that
22 accounts for network behavioral characteristics
23 there?

24 (The deponent read the
25 document.)

1 A Could you repeat the question,
2 please?

3 Q What are you referring to that --
4 here when you say "accounts for network
5 behavioral characteristics"?

6 A Well, what the specification says
7 here at column 12, line 15, is that "Because
8 network behavioral characteristics fluctuate,
9 sometimes quite suddenly, any given delta may
10 vary substantially from another."

11 And if you read the
12 specification here, I actually think there's a
13 typo on line 11. They're talking about the
14 time intervals, capital A, but I think that --
15 they're referring to that as "delta" later.

16 So what the patent specification
17 is saying is that there is a variation between
18 the packets -- the time interval between the
19 successive reception time of the successive
20 packets.

21 So that -- if packets are sent
22 from a source at a regular interval and then
23 they arrive at irregular intervals, it's
24 because -- that's something known as "jitter,"
25 and that can be introduced in the network.

1 But if you look at this
2 equation, what it's basically doing, this
3 equation in about line 25 of column 12, is
4 basically summing up all the deltas over n
5 samples and dividing by n.

6 So it's actually averaging it
7 back to something that approaches the rate that
8 it was sent at to start with, or the interval.
9 And then it multiplies by the playback length S
10 which is the -- it gets to the playback length
11 of streamlets of playback length S.

12 So if you're sending a streamlet
13 at regular intervals, r would tend to revert to
14 about 1, I think, which is the playback length
15 divided by the average interval that you
16 receive them.

17 And so that basically averages
18 out a lot of the jitter, but over samples of n.
19 And so what this is doing is capturing some
20 measure, although much reduced, of the averaged
21 amount of the -- of the change in deltas
22 between successive packet receptions.

23 Q Okay.

24 So is the r that you referred to
25 there, that's the performance ratio, correct?

1 A That is referred to as the
2 performance ratio in one embodiment on line 20
3 of column 12, in 20 to 21.

4 Q Okay.

5 And your paragraph 27 also
6 refers to a performance factor. Is that the
7 same as the performance ratio or is that
8 something different, in your view?

9 (The deponent read the
10 document.)

11 A Well, if you look at column 3,
12 line 11, starting there, which I cite to in the
13 middle of paragraph 27 after I quote the term
14 "performance factor" on the second line of
15 paragraph 27, it says, "In a further
16 embodiment, the agent controller module is
17 configured to upshift to a higher quality
18 streamlet when the performance factor is
19 greater than a threshold, and the agent
20 controller module determines the higher quality
21 playback can be sustained according to a
22 combination of factors."

23 And then if you look at the --
24 this is kind of in the summary section. And
25 then if you go back to column 12, which I also

1 cite right after that -- in the middle of --
2 after the first sentence, it talks about in
3 line 41, which is in the last block -- cited
4 passage, "The policy" -- it says, "The policy
5 determination about whether or not to upshift
6 710 playback quality begins by comparing
7 phicurrent with a trigger threshold thetatau."

8 So -- so it's clear that, you
9 know, now we're talking about comparing against
10 thresholds, which is kind of at the high-level
11 summary of what the passage in column 3 was
12 talking about when it was talking about
13 performance factors.

14 And so if you also look at
15 column 12, line 3 -- around 33, it talks about
16 obtaining a performance factor ϕ , which --
17 which is -- this is the kind of geometric mean
18 of all the r ratios, performance ratio
19 calculated in line 25, over n samples -- over
20 n -- n measurements of r , which is over n
21 samples of δ .

22 Q So the performance factor you're
23 referring to in paragraph 27 is the performance
24 factor ϕ in this specification? Is that
25 correct?

1 A Well, in one embodiment. The
2 specification gives an example of a performance
3 factor ϕ , and what the -- what I cite from
4 the specification is it's talking about these
5 policy determinations by comparing ϕ_{current}
6 with a trigger threshold θ_{up} , and that's
7 what it says in the specification.

8 So I'm -- I'm -- I'm referring
9 to these sections in the specification of the
10 '772.

11 Q Okay.

12 So in doing the -- what did you
13 call delta? You said delta corresponds to
14 jitter? Is that correct?

15 A No, delta is the -- is the time
16 interval between successive receptions --
17 between successive receive times for each
18 streamlet response, and that's -- that's what
19 it says up around line 10 or 11 of column 12.

20 And then -- so if the streamlets
21 are sent at the regular intervals, they would
22 be sent at regular intervals that would -- in
23 steady state, if you want to send a streamlet
24 and play a streamlet, you'd want to send a
25 streamlet about -- at intervals which mirror

1 closely the duration of the segment in
2 playback.

3 And so if you're sending them at
4 regular intervals, delta -- delta would tell
5 you -- give some notion of the jitter.

6 But if you're not sending at
7 regular intervals, if you burst them, delta is
8 telling you -- what the specification says here
9 is that the agent controller 402 in one
10 embodiment "monitors the time intervals between
11 successive receive times for each streamlet
12 response."

13 So -- so whenever you --
14 whenever you receive the streamlets in response
15 to requests, it's measuring the time between
16 successive receive times for those streamlet
17 responses.

18 So if it were the situation that
19 you're requesting at regular intervals and they
20 were being sent at regular intervals, that
21 would be somewhat reflective of the jitter.

22 If you're not requesting at
23 regular intervals, if you're bursting requests,
24 that is less indicative of the network jitter.

25 Q Okay.

1 Well, in that case, what would
2 it be indicative of, then?

3 A It would be indicative of the
4 difference between your request times and the
5 reception times.

6 I mean, if you burst your
7 requests quickly, you would expect to receive
8 responses with smaller deltas, right?

9 If you send out requests that
10 are smaller and the timing -- in less time
11 between requests then the streamlets take to
12 play, you expect to get responses that are also
13 clustered together in less time than the
14 streamlets take to play.

15 Q Can you describe what you mean by
16 "bursting"?

17 A One might send some successive
18 requests for a segment. This is not what it's
19 talking about, but I'm just saying it's -- this
20 portion doesn't say at what intervals the
21 requests are sent. It's just talking about
22 measuring the time intervals between successive
23 receive times for each streamlet response. And
24 so it's -- that's what it says this performance
25 factor is based on.

1 And so, you know, if one were
2 sending them at regular intervals, requests for
3 segments, every -- you know, say a segment
4 playback time is of duration T, and if you're
5 sending requests out at T, then -- then you
6 expect to get responses back at intervals of T
7 with some -- maybe some jitter.

8 But if you maybe send requests
9 at T over 10, I would call that -- that's what
10 I -- I think I'm saying by bursting requests.

11 MS. FINGER: Counsel, before you
12 ask your next question, can we take a quick
13 break? We're having issues with the realtime.

14 MR. WILLIAMS: Sure. That's
15 fine.

16 (Recess.)

17 BY MR. WILLIAMS:

18 Q You completed your answer, right?

19 A Yes, I completed it.

20 Q Okay.

21 So the example you gave was
22 sending requests at T over 10, and I'm not sure
23 I understood what that meant.

24 So you would send a request
25 every T over 10 seconds? Is that what you

1 mean?

2 MS. FINGER: Object to form.

3 A Yeah, whatever the time unit of T
4 was. T, as I said, was the duration of
5 playback for a segment. And so if you're
6 requesting them ten times faster than you're
7 able to play them back, you would -- you would
8 see deltas that are about also T over 10, on
9 average.

10 Q Right. That's what I want to ask
11 about.

12 So in that situation, each
13 individual delta could still be different,
14 though, correct?

15 MS. FINGER: Object to form.

16 A They would be, but if you're summing
17 over n samples, then -- and then averaging
18 them, then you're averaging out differences
19 that may be causing network...

20 Q I see. That I think helps me
21 understand what you're -- what I'm struggling
22 with is trying to understand your opinion here
23 in paragraphs 26 and 27 when you say -- you're
24 setting up this dichotomy, it seems to me,
25 between the determination depending directly on

1 the user's network connection and the fact that
2 there is some accounting for network behavioral
3 characteristics.

4 It seems like you're creating
5 this dichotomy that I'm not understanding, so
6 can you explain that to me?

7 MS. FINGER: Object to form.

8 A Well, what I'm saying is that this --
9 this is -- this particular embodiment of a
10 performance ratio factor and then the
11 performance factor caused by the geometric mean
12 actually would be more impacted by the request
13 interval, which doesn't really have anything to
14 do with network in that case, than the -- than
15 things occurring in the network which are
16 really washed out by -- by the way these
17 performance factors are calculated.

18 Q So in column 12 -- turning to the
19 '772 patent, the section you're reading from is
20 at column 12. The sentence at line 15 that
21 says "network behavioral characteristics
22 fluctuate, sometimes quite suddenly," what's
23 your understanding of what characteristics are
24 being referred to there?

25 MS. FINGER: Object to form.

1 And, Counsel, if you could speak
2 up a little bit, that would be helpful.

3 A Well, what is saying fluctuates -- it
4 says any given delta may vary substantially
5 from another.

6 And so if you're sending them --
7 requests out at regular intervals and you kind
8 of expect to receive the response at regular
9 intervals, then what happens is that -- let's
10 say you get -- you know, you're sending them
11 out at T seconds, but then you -- you get, you
12 know, T plus 10 percent of T, you know, is one
13 interval. Next interval might be T plus .9 --
14 .9 -- minus 10 percent of T. But average over
15 those two intervals, you get T.

16 And so -- so things can vary
17 suddenly, but -- but they -- you know, for
18 brief periods.

19 But what I'm -- what this -- you
20 know, now say if you've sent out 10 requests at
21 interval of T over 10, and you get them back at
22 interval of T over 10 on average, with some
23 variation, but over the 10 you would expect to
24 get it closer to 10 times T over 10, this
25 performance factor would result in something

1 that the ratio goes up to 10 because, you know,
2 S is fixed. It's the segment playback time,
3 playback length.

4 And r is much more heavily
5 influenced by the interval at which you send
6 the request. And if you're sending them T over
7 10 to burst over 10 packets, this ratio
8 really -- this ratio actually approaches -- is
9 more indicative of how fast you're sending
10 requests compared to the playback length than
11 it is capturing any network effects.

12 And then taking the geometric
13 mean of a whole bunch of them further averages
14 out the things that average out in the network.
15 And that's part of why I'm saying here, you
16 know, in paragraph 26 that "the determination
17 does not depend directly on the user's network
18 connection."

19 Q Okay.

20 Jitter, though, would be a
21 characteristic of the user's network
22 connection, correct?

23 MS. FINGER: Object to form.

24 A I mean, it could be partially
25 introduced by that, but, overall -- but the

1 equation kind of averages out any jitter
2 because you're sampling over a large number
3 of -- you know, if n is -- well, I mean, if you
4 increase n, you're averaging out all that, and
5 then you're doing a geometric mean of
6 successive samples.

7 But what I'm saying is that this
8 would be much more dominated by how fast you're
9 sending out requests in this embodiment of
10 performance factor.

11 Q Okay.

12 I was going to go into something
13 else, but we've gone for like an hour. Why
14 don't we just take a short break.

15 (Recess.)

16 BY MR. WILLIAMS:

17 Q Now, in your declaration -- in your
18 supplemental declaration for the '772 patent,
19 Dr. Houh, can you turn to paragraph 34.

20 A Okay.

21 Q There's a block quotation in that
22 paragraph. Do you see that?

23 A Yes.

24 Q And that's referring to the file
25 history of the '772 patent; is that right?

1 A Yes, I think that's right.

2 Q I'm going to hand you what's been
3 previously marked as Exhibit 1002, which is a
4 portion of that file history.

5 MS. FINGER: For which IPR,
6 Counsel?

7 MR. WILLIAMS: The one that
8 Dr. Houh is citing.

9 MS. FINGER: So there's three
10 citations. In this paragraph? I just want to
11 make sure I'm looking at the correct Exhibit
12 1002.

13 BY MR. WILLIAMS:

14 Q So what are you citing to in this
15 paragraph, Dr. Houh?

16 A I believe I'm citing to the file
17 history of the '772 patent prosecution.

18 Q Okay.

19 So is the document I gave you
20 the one that the citation is coming from?

21 MS. FINGER: Can you just
22 clarify for the record which Exhibit 1002
23 you're relying on?

24 MR. WILLIAMS: Are you asking
25 me -- I'm sorry, I don't understand the

1 question.

2 MS. FINGER: So there's -- 1002,
3 the exhibit is different for all three IPRs,
4 and I'm asking you to clarify which one you're
5 relying on.

6 MR. WILLIAMS: Yeah, well, I'm
7 trying to find out what the witness is
8 referring to. So that's what the deposition is
9 for. So we're going to find that out.

10 MS. FINGER: I'm asking you what
11 you handed him.

12 MR. WILLIAMS: I handed him a
13 document that's marked Exhibit 1002.

14 MS. FINGER: From which IPR?

15 MR. WILLIAMS: Are you asking
16 whether this is the file -- which patent this
17 is the file history of? Is that what you're
18 trying to find out?

19 MS. FINGER: I'm asking which
20 IPR this is Exhibit 1002 to.

21 MR. WILLIAMS: I don't know.
22 What I'll represent is this is the file history
23 of the '772 patent.

24 BY MR. WILLIAMS:

25 Q So my question to the witness is, is

1 this -- the document I handed you, is that the
2 one you're quoting from in paragraph 34 of
3 the --

4 A Yes. So just to clarify, I have
5 three citations. It's Exhibit 1002 to the
6 matter number ending in 919, which I believe is
7 the '772 matter. But I -- it's also attached
8 as different exhibit numbers for the other two
9 matters, for the other patents, the '156 and
10 '564. And it's Exhibit 1018 to both the other
11 two matter numbers, because the file histories
12 for those are probably Exhibit 1002 for those.

13 So I've attached as an exhibit a
14 separately numbered exhibit for the other
15 matters, not the '772 matter. And they're
16 listed here in paragraph 34.

17 But I think it's the same
18 document referred to in all three matters, but
19 they're different exhibit numbers.

20 So this is Exhibit 1002 to the
21 matter number for the '772, which I think is
22 the 911 -- 919 matter number.

23 So that's what I believe I have
24 in front of me, because if you look at
25 page 456, that is -- let's see.

1 Yeah, that is where the cited
2 block quote comes from, which is the last full
3 paragraph on page 456 of the Exhibit 1002 using
4 a number -- page number at the lower right-hand
5 corner.

6 Q Okay.

7 And your citation to this block
8 quote was in support of a statement that --
9 withdraw that question.

10 You go on in paragraph 35 to
11 discuss this block quote, and you conclude that
12 "A person of ordinary skill in the art would
13 understand this discussion as describing
14 continuous playback as shifting between video
15 qualities at the same time index," correct?

16 MS. FINGER: Object to form.

17 A Yeah, so what I'm highlighting here
18 is yes, so this is -- this is what the
19 prosecution history says, which is -- which
20 helps inform a person of ordinary skill in the
21 context of the specification prosecution
22 history, which this is, of the -- of the
23 meaning of -- of what "playback is continuous"
24 includes.

25 And what it says here, these are

1 applicant remarks. It says, "So shifts happen
2 on portion boundaries and the portion
3 boundaries of the copies at the same time index
4 in the video -- meaning playback is
5 continuous."

6 So this person of ordinary skill
7 would understand that when -- if shifts happen
8 on portion boundaries and the portion
9 boundaries of the copies are at the same time
10 index in the video, that -- that is what the
11 applicant means by when playback is continuous,
12 or continuous playback.

13 And that would be what would be
14 included in the plain and ordinary meaning that
15 a POSITA would -- would understand looking at
16 this specification and prosecution history of
17 the '772.

18 Q So you agree that to understand what
19 the patent claims mean, a person of ordinary
20 skill would consider the file history, correct?

21 MS. FINGER: Object to form.

22 A Yeah, I'm not a lawyer, but my
23 understanding is that the person of ordinary
24 skill considers the plain ordinary meaning of
25 the terms in the claims in the context of the

1 specification and the prosecution history. And
2 this is an excerpt -- these are all publicly
3 available documents that POSITAs have access
4 to.

5 And so POSITAs can look at the
6 prosecution history and say, oh, well, the
7 applicant says right here that when shifts
8 happen on portion boundaries and the portion
9 boundaries of the copies have -- are at the
10 same time -- or at the same time index in the
11 video, that is what the applicant means by
12 "playback is continuous." Because it says
13 "meaning playback is continuous" right after
14 that phrase.

15 And so -- and this description,
16 which is, effectively, summarized by that last
17 statement. And so -- so a person of ordinary
18 skill would understand this is an example that
19 the applicant has now put in the record in the
20 prosecution history that is included within the
21 scope of -- of continuous playback.

22 Q So are you saying a person of
23 ordinary skill in the art reading this
24 description would conclude that if a shift
25 occurred at a boundary and there was a

1 10-second gap between -- between playback of
2 the first streamlet and the second streamlet,
3 that would be continuous, as the patent owner
4 has used the term here?

5 MS. FINGER: Object to form.

6 A Well, I -- so I did the analysis for
7 the prior art, which includes Leaning, and
8 Leaning does exactly this, and I've shown that.
9 And Leaning actually does -- it's not the
10 situation you're describing here.

11 What I consider is what Leaning
12 teaches, and Leaning doesn't -- doesn't have
13 that -- that issue that I lay out in my, I
14 think, original declaration. I had to
15 reexplain it by citing back to portions of
16 Leaning, I think, in my supplemental.

17 But what I'm saying here is --
18 is this is what the applicant has said is
19 included in the meaning of "playback is
20 continuous" or "continuous playback."

21 If shifts happen on portion
22 boundaries and portion boundaries of the copies
23 at the same time index in the video. And I've
24 shown that that's present in Leaning, but I'm
25 not talking about what you're asking about.

1 Leaning doesn't -- you're asking a slightly
2 different question.

3 But this informs a POSITA --
4 this statement from the prosecution history --
5 about what the applicant intended to include --
6 they included an example of playback is
7 continuous. This is the example.

8 And so a person of ordinary
9 skill would understand that this is within the
10 scope of continuous playback as used in the
11 claims. And I did the analysis with respect to
12 Leaning that showed this example in Leaning,
13 and I did the analysis, and that's how Leaning
14 discloses that claim element and the portion of
15 the claim element using this phrase.

16 Q You agree with me that this
17 particular portion of the file history that
18 you're referring to here doesn't explicitly
19 talk about whether there's an interruption
20 between -- in playback between the two portions
21 being played, correct?

22 MS. FINGER: Object to form.
23 (The deponent read the
24 document.)

25 A So I don't see the word

1 "interruption" or anything used in the
2 discussion around the pages that I've cited to,
3 but nevertheless, I haven't depended on any
4 Leaning scenario where there is such an
5 interruption that you're asking about.

6 Leaning is clear that it is
7 requesting portions -- it is requesting
8 portions. It -- it shifts on portion
9 boundaries and that the portion boundaries --
10 the different copies at different resolutions
11 have the same time index. Leaning teaches all
12 that.

13 And I'm not depending -- and
14 I've explained why it -- notwithstanding
15 Dr. Jeffay's arguments, which I believe he's
16 incorrect about, that there are gaps, there are
17 no gaps in what I'm relying on in my analysis
18 of Leaning.

19 But -- so Leaning teaches
20 exactly what the applicant has said here
21 includes -- is within the scope of playback is
22 continuous or continuous playback. And you're
23 asking about these gaps, which I'm not relying
24 on any embodiment in Leaning that has any such
25 gaps. There is -- there is no such thing.

1 But I acknowledge that this
2 portion of the prosecution history, at least
3 on, you know, the page before and the page
4 after, I don't see any discussion about
5 interruptions.

6 Q Okay.

7 Can you turn to page 118 of that
8 document?

9 Are you on that page?

10 A Yes, I see page 118.

11 Q I just want to ask you about the
12 section designated number 2 in the middle of
13 the page of 118.

14 Have you considered that section
15 of the file history in forming your opinions?

16 A I mean, I do recall looking at
17 portions that talked about Radford.

18 Q Okay.

19 And you agree with me that this
20 section -- this middle paragraph talks about
21 interruptions, correct?

22 MS. FINGER: Object to form.

23 (The deponent read the
24 document.)

25 A You're asking about the paragraph

1 with the heading labeled 2?

2 Q Yes.

3 (The deponent read the
4 document.)

5 A Well, what I believe this is
6 responsive to, it does use the word
7 "interruption," but there is -- the main point
8 that I understand from this paragraph is that
9 Radford is disclosing a system where the user
10 had to manually change the -- the stream
11 quality, and they would do it in response to a
12 poor viewing experience.

13 So if they were watching HD and
14 there were interruptions, that they would have
15 to manually select the quality.

16 And so this is with respect to
17 the reasons that applicant is saying in Radford
18 a user might want to change the quality of the
19 streamed data in response to a poor viewing
20 experience.

21 And this is -- this is in
22 response to what claim 20 recites, that the --
23 it's automatically and progressively
24 requesting.

25 So I think this is responsive to

1 the rejection -- to getting around Radford by
2 saying that there's a manual selection. It's
3 not directed to -- although it says
4 anticipating a poor user experience for
5 continuous playback. And it does say that the
6 streamed data deteriorates or is marred by
7 interruptions.

8 That would be a reason why the
9 user in Radford would want to change the
10 quality of the streamed data, and therefore
11 it's not automatically and progressively
12 requesting, as required by claim 20. And I
13 think that's responsive to that issue in the
14 claim as amended.

15 Let me just take a look at
16 the...

17 (The deponent read the
18 document.)

19 A Which they've amended to now add the
20 "automatically and progressively" on page 4 to
21 claim 20. And I think this is now arguing that
22 while claim 20 -- now that we've amended it to
23 include "automatically and progressively,"
24 Radford isn't teaching that.

25 Radford is teaching the user is

1 manually changing the stream quality and giving
2 examples of -- of why they might in Radford
3 change, as opposed to automatically and
4 progressively, which -- which is described in
5 that paragraph 2 as -- as -- as what claim 20
6 is now reciting.

7 Q Okay.

8 So are you saying that your view
9 of a person of skill in the art reading this
10 file history section would conclude that the
11 inventors were emphasizing the automatic nature
12 of their claims as distinguishing Radford as
13 opposed to continuous playback?

14 MS. FINGER: Object to form.

15 (The deponent read the
16 document.)

17 A I think there's an open quote missing
18 in this paragraph, but I think it would go
19 right after the closed quote of "automatically
20 and progressively requesting," because they are
21 citing to a number of portions.

22 But certainly the fact that
23 Radford discloses manually selecting the
24 quality of the streamed data, and then they
25 cite first automatically and progressively

1 requesting, which was part of the amended
2 claim 20, and then -- and then all the rest.

3 The text indicates that the
4 responsiveness is really to -- about the issue
5 that Radford discloses, manually selecting the
6 quality of the streamed data, and they
7 certainly added the "automatically and
8 progressively requesting," as indicated on
9 page 4 of the same -- page 110 of the
10 document -- of the Exhibit 1002, as well as
11 citing, you know, to other language added in
12 the amendment, in the amended claim.

13 Q Can you read the bolded language in
14 that paragraph to me, please?

15 MS. FINGER: Object to form.

16 A Yes. It is, "to achieve continuous
17 playback of the video," which is part of the
18 language that was added in the amendment.

19 Q That's the only bolded portion of
20 this paragraph, correct?

21 A It's within a cited passage of the --
22 of the amended claim. It doesn't say "emphasis
23 added," but yes, there is emphasis added there.

24 But the text of the paragraph as
25 it opens is the applicant arguing about Radford

1 discloses manually selecting the quality of the
2 streamed data in response to poor viewing
3 condition -- poor viewing experience, and
4 that -- and that -- and that they added
5 "automatically and progressively requesting,"
6 which would appear to be a way to get around
7 Radford's manually selecting the quality of the
8 streamed data, which until the amendment, the
9 claim simply said "simultaneously requesting at
10 least portions of a plurality of streamlets and
11 continuously monitoring the progress of
12 subsequent responses to streamlet requests in
13 accordance with the progress of the responses,"
14 and it goes on.

15 But that would appear to not
16 exclude a manual request by a user. And so
17 that's why they amended it, applicant appears
18 to have amended it to add the language
19 "automatically and progressively requesting,"
20 which is what -- the first thing they say.

21 But I admit it does say to
22 achieve continuous playback of the video, but
23 that's -- they're talking about what a poor
24 viewing experience might be, which is that the
25 streamed data deteriorates or is marred by

1 interruptions.

2 And, you know, to achieve
3 continuous playback of the video is really kind
4 of an aspirational addition. It's a goal.

5 Q A goal of what?

6 A Well, it's a goal of something to
7 achieve, but it's -- it's -- it certainly was
8 added to the claim language.

9 Q Sure.

10 So it's -- you can see that the
11 language that you see there in bold, "to
12 achieve continuous playback of the video," is
13 in the claim, correct?

14 A Yes, it's in the claim, certainly as
15 amended here and I believe as ultimately
16 issued.

17 But if we, again, look back at
18 the other cited passage, the applicant was very
19 clear about an example they gave as what was
20 included in the meaning of "continuous
21 playback" or "playback is continuous," which a
22 POSITA would understand is informing -- giving
23 an example of continuous playback and what
24 would be required.

25 Q Okay.

1 What -- is it your view that a
2 person of skill in the art reading this section
3 of the file history would conclude that the
4 applicant intended to include within the scope
5 of their claims playback that was marred by
6 interruptions?

7 MS. FINGER: Object to form.

8 (The deponent read the
9 document.)

10 A Well, what they're citing here, which
11 is -- I don't know. I -- it's difficult to
12 tell. There's no quotes here, but it's citing
13 here that Radford discloses manually selecting
14 the -- it's argued here that the applicant
15 respectfully submits that Radford discloses
16 manually selecting the quality of the streamed
17 data in response to a poor viewing experience,
18 e.g., the streamed data deteriorates or is
19 marred by interruptions. And it's referring to
20 Radford page 4, paragraphs 29-31.

21 So I don't know if that's taken
22 literally from those, but the argument is that
23 Radford is manual, a manual selection of the
24 streamed data, of the quality of the streamed
25 data.

1 And in response to now adding
2 "automatically and progressively requesting,"
3 which would be a way to get around a person
4 manually changing or requesting the quality of
5 the streamed data. And -- and there is
6 emphasis added in this paragraph in addition to
7 the bold. It's just in italics. And it's "in
8 response to a poor viewing experience."

9 And that's what -- that's what
10 in Radford would trigger a user to change the
11 quality of the streamed data, that -- and an
12 example is given, is that the streamed data
13 deteriorates or is marred by interruptions.

14 And so that would be something
15 that Radford may be talking about, or that the
16 applicant is pointing out that -- giving an
17 example of Radford. And if you have Radford,
18 I'd love to look at it. But an example of what
19 a poor viewing experience is is that there's
20 interruptions. And that's -- that's an example
21 of simply why the user in Radford would change
22 the quality of the streamed data.

23 And -- and the language "to
24 achieve continuous playback of video" is simply
25 a goal, an aspirational goal as to the

1 additional language that was added to claim 20
2 at this -- at this time in the prosecution.

3 Q So you started that answer by saying
4 "It's difficult to tell."

5 Is that -- by that, am I to
6 conclude that then as a person of skill in the
7 art, reading this section of the file history,
8 you can't tell whether the applicants here
9 intended to include or exclude from the scope
10 of their claims playback that was marred by
11 interruptions, correct?

12 MS. FINGER: Object to form.

13 A Sorry, that's not what I meant. What
14 I meant about what's difficult to tell is I
15 can't tell by looking at the first sentence of
16 the applicant's argument whether those are
17 literal excerpts from Radford or they are
18 simply the applicant's summary of Radford.

19 Q Okay.

20 A And if you have a copy of Radford, I
21 would look at paragraphs 29 and 31. So I
22 didn't mean to imply that was the answer to
23 that part of your question.

24 Q That's helpful.

25 So then I'll move to strike your

1 prior answer, then, because the question I'm
2 asking you has to do with a person of ordinary
3 skill in the art.

4 Just reading the words in the
5 file history here, would a person of skill in
6 the art reading this portion of the file
7 history be able to conclude whether the
8 applicants intended to include within the scope
9 of their claims playback that is marred by
10 interruptions?

11 MS. FINGER: Object to form and
12 asked and answered.

13 A I mean, what the argument by the
14 applicant is saying here is that's an example
15 of a poor viewing experience, and that the user
16 in Radford would manually change the quality of
17 the streamed data.

18 And while -- and certainly to
19 put in the language of "automatically and
20 progressively requesting," which is the first
21 part of the amended claim that was cited about
22 what claim 20 is talking about, responsive to
23 the issue in Radford being that the user has to
24 manually select the quality of the streamed
25 data or that the -- that the applicant's

1 arguing that they do so in Radford in response
2 to a poor viewing experience.

3 They did add the "automatically
4 and progressively requesting," and I think -- I
5 think that they amended the claim to get around
6 the manual part of the -- of the
7 "simultaneously requesting at least a portion
8 of a plurality of streamlets," so that the
9 manual selection in Radford would no longer --
10 you know, would get around that based on the --
11 based on the -- the Patent Office arguing that
12 Radford is disclosing the pre-amended part of
13 claim 20 and that it's simply giving an example
14 of a poor viewing experience in Radford.

15 And they added this aspirational
16 goal of "to achieve continuous playback of a
17 video," which is -- which is -- I do admit is
18 bolded, has bolded emphasis, just as, you know,
19 "in response to poor viewing" -- "a poor
20 viewing experience" has italicized emphasis in
21 the same paragraph.

22 But I think a POSITA would look
23 at further arguments made by applicant,
24 including pretty much giving an express example
25 of what's included in the scope of "playback is

1 continuous" or "continuous playback," as we
2 looked at later, and understand that's
3 certainly an example of a -- of what applicant
4 intended to be within the scope of "continuous
5 playback."

6 And as I -- as I stated earlier
7 in my Leaning analysis, I didn't rely on any
8 embodiments of Leaning where there would be
9 interrupted playback, notwithstanding I
10 understand Dr. Jeffay argues otherwise. But
11 there are embodiments that I've cited to in
12 Leaning that don't -- that don't have the
13 problems cited by Dr. Jeffay, and which I
14 disagree are problems in my Leaning analysis.

15 Q You concede there are embodiments of
16 Leaning that have interruptions, correct?

17 MS. FINGER: Object to form.

18 A What are you referring to? I
19 don't -- I don't think I've conceded that, to
20 my recollection.

21 Q Okay.

22 You don't concede that, then?

23 A Well, I -- I'm not sure what you're
24 referring to of my statements.

25 Q I don't know. You said you didn't

1 rely on any embodiments of Leaning where there
2 would be interrupted playback, and I'm just
3 trying to find out if you're agreeing that
4 there are embodiments of Leaning that do have
5 interrupted playback or not.

6 MS. FINGER: Object to form.

7 A I believe I did a proper analysis
8 where I showed that there were statements from
9 Leaning about, like, finishing up the last
10 sample -- you know, sample of the previous
11 segment at one resolution and starting with a
12 sample at a different resolution.

13 There's certain -- those are the
14 types of things I rely on in Leaning, and so I
15 don't think I've conceded anything about any
16 other embodiments. It's just what I relied on
17 are the embodiments I relied on that I think
18 are proper and do disclose and render obvious
19 the -- the challenged claims for the reasons
20 I've given in my declarations -- well, my
21 opening declaration, which I further kind of
22 piece together the analysis, in some cases
23 pointing back to my original declaration, in my
24 supplemental declaration in response to
25 Dr. Jeffay's arguments.

1 Q Okay.

2 We'll turn to Leaning in a
3 little bit, but let me ask you to move down to
4 paragraph 39. This is in your declaration
5 again, the supplemental declaration.

6 MS. FINGER: Which paragraph did
7 you say?

8 MR. WILLIAMS: 39.

9 A Okay.

10 Q Just take a look at that paragraph.
11 Let me know when you've read it.

12 (The deponent read the
13 document.)

14 A Okay. I've looked at paragraph 39.

15 Q Okay.

16 So the first sentence ends with
17 "'continuous playback' does not mean completely
18 interrupted."

19 Do you see that?

20 MS. FINGER: Object to form.

21 A The last two words are "completely
22 uninterrupted."

23 Q Oh, I'm sorry. You're right. We
24 should get that right.

25 So the end of that sentence is

1 "'continuous playback' does not mean completely
2 uninterrupted."

3 MS. FINGER: Object to form.

4 Q Did I read it correctly?

5 A Yes, I believe you did this time.

6 Q Okay, thanks.

7 Is that -- is that your opinion?

8 A What I'm saying here is that
9 Dr. Jeffay and other individuals who provided
10 support, they confirmed that continuous
11 playback does not mean completely
12 uninterrupted, because, I go on to say, "The
13 Patent Owner Responses contend that the MOVE
14 product meets the continuous playback
15 limitations," and that's the product -- this is
16 the patent owner's -- what the patent owner is
17 saying.

18 But the MOVE product experienced
19 delays, freezing and buffering. So my point
20 here is that if the patent owner, you know,
21 contends that the MOVE product meets continuous
22 playback limitations and it experiences delays,
23 freezing and buffering and all these different
24 types of -- of interruptions, that it couldn't
25 be that the patent owner means that continuous

1 playback means completely uninterrupted --

2 Because they contend that the
3 MOVE product does meet the continuous playback
4 limitations, that -- and it did experience
5 delays and freezing, that -- my point is that
6 that confirms that continuous playback does not
7 mean completely uninterrupted.

8 Q Yeah, but -- right. I think I
9 understood that. And I get the argument you're
10 making in this paragraph.

11 What I'm trying to figure out is
12 putting aside this contingency that you've just
13 built into the answer, do you -- is it your
14 opinion in this case that "continuous playback"
15 does not mean completely uninterrupted? Or are
16 you just saying that's only true -- I don't
17 actually have this opinion, but if you accept
18 what Dr. Jeffay is saying about secondary
19 indicia, then this is true.

20 That's what I'm trying to figure
21 out.

22 MS. FINGER: Object to form.

23 A I mean, my opinion is what I am
24 saying here. So it is that it's -- it's --
25 Dr. Jeffay and other individuals basically are

1 saying -- they provide a declaration in support
2 of the patent owner's responses where they say
3 the patent owner responses contend that the
4 MOVE products meet the continuous playback
5 limitations.

6 That just confirms that the
7 patent owner responses confirm that the
8 continuous playback does not mean complete,
9 uninterrupted. Otherwise, the MOVE product
10 could not meet the continuous playback
11 limitations. And because they contend it does,
12 then that just confirms that the patent owner
13 responses confirm themselves that the meaning
14 of "continuous playback" does not mean
15 completely uninterrupted.

16 Q I guess I'm focusing on the word
17 "confirm" there.

18 So "confirm" suggests -- it's
19 not just establishing this fact. It confirms
20 the fact, which -- therefore, does that mean
21 that that is your opinion, that continuous
22 playback does not mean completely
23 uninterrupted, and this evidence confirms that
24 opinion?

25 Is that what you're saying?

1 MS. FINGER: Object to form.

2 (The deponent read the

3 document.)

4 A So if you look at the previous
5 paragraph, which leads into, you know -- it
6 talks at the end, for example, the sixth line
7 from the bottom, "The shared specification" --
8 which is the specification of the three patents
9 at issue in the three -- in the three fuboTV
10 cases, it says -- uses -- "The shared
11 specification uses the term 'disruption' (or
12 any variation thereof) exactly once, in
13 referring to 'network disruptions,' for
14 example, Internet outages." And "The supposed
15 invention does not relate to network issues,
16 much less solving them. At most, the
17 specification explains some approaches to help
18 'withstand' such disruptions."

19 And it's the withstanding of
20 such disruptions which, you know, then I
21 further go on to the next paragraph where I
22 say, "The testimony of Dr. Jeffay and other
23 individuals who provided declarations in
24 support of the Patent Owner Responses confirm
25 that 'continuous playback'" -- that two-word

1 phrase in quotes -- "does not mean completely
2 uninterrupted."

3 And that is confirming,
4 basically, that at most -- at least -- it says,
5 "At most, the specification explains why --
6 some approaches to help 'withstand' such
7 disruptions."

8 And that's confirmed by what the
9 patent owner in the response say. They confirm
10 that "continuous playback" does not mean
11 completely uninterrupted, for the reasons I
12 give here in paragraph 39.

13 Q Okay.

14 And you agree with that, that
15 "continuous playback" does not mean completely
16 uninterrupted, correct?

17 MS. FINGER: Object to form and
18 asked and answered.

19 A Well, the specification explains some
20 approaches to help withstand disruptions, and
21 that's what I'm saying. Even the patent owner
22 is confirming that continuous playback does not
23 mean completely uninterrupted, because the
24 specification explains some approaches to help
25 withstand such interruptions, but it doesn't --

1 it's -- it's -- I mean, my opinions are exactly
2 what I have written here.

3 Q Okay.

4 What I'm telling you is what is
5 written here is unclear to me, so that's why
6 I'm asking if you could confirm or deny that it
7 is your opinion that "continuous playback" does
8 not mean completely uninterrupted?

9 MS. FINGER: Same objections.
10 Let the record reflect that counsel is
11 repeatedly testifying.

12 A So you may want to put words into my
13 declaration, but my opinion is what I -- is
14 what I've written here in my declaration.

15 Q And you have no -- okay.

16 So you have no opinion other
17 than what's written in your declaration,
18 correct?

19 A My supplemental declaration contains
20 the totality of my supplemental declaration
21 opinions.

22 Q Okay.

23 So would it be -- if the board
24 were to read this paragraph, would they be
25 wrong to conclude it was your opinion that

1 "continuous playback" does not mean completely
2 uninterrupted?

3 MS. FINGER: Object to form.
4 Calls for speculation.

5 A I don't know what the board's going
6 to do.

7 Q Okay.
8 What would you like them to
9 think your opinion is with respect to whether
10 or not "continuous playback" means completely
11 uninterrupted?

12 MS. FINGER: Same objection.

13 A I would like to take away -- them to
14 take away that based on the testimony of Jeffay
15 and individuals who provided declarations in
16 support of the patent owner responses, that
17 they see that the patent owner responses
18 confirm that "continuous playback" does not
19 mean completely uninterrupted, because the
20 patent owner responses -- responses are
21 contending that the MOVE product meets the
22 continuous playback limitations.

23 And because the MOVE product
24 experienced delays and has interruptions and
25 the patent owner contends that that MOVE

1 product meets the continuous playback
2 limitations, that the PTAB would see that the
3 patent owner responses confirm that continuous
4 playback -- that the testimony of Jeffay and
5 other individuals who provided declarations in
6 support of the patent owner responses confirm
7 that "continuous playback" does not mean
8 continually uninterrupted.

9 Q Did you ever see the MOVE player in
10 operation, Dr. Houh?

11 A It's possible that I have at some
12 point, because I spent a lot of my time in this
13 area, but I don't recall looking at it for the
14 purposes of the supplemental declaration.

15 Q Do you know if the MOVE product --
16 personally do you know if the MOVE product had
17 interruptions during playback?

18 Like do you have a recollection
19 of that one way or another?

20 A I've relied on the testimony that
21 I've reviewed of -- and provided by Dr. Jeffay,
22 cited to and relied on, and that I also -- I
23 think I looked at the same -- similar portions
24 that I -- certainly for here where the people
25 providing that deposition testimony admitted

1 that there are freezing and delays.

2 There are documents in -- in
3 technical summary documents or overview,
4 technical marketing documents that talk about
5 various metrics in the MOVE player to track
6 stalls, many -- many different metrics related
7 to stalls, and -- and -- and I think even
8 Dr. Jeffay's own statements in -- as I've cited
9 here, to show that the MOVE player, even as --
10 as provided by -- you know, in the patent owner
11 responses have stalls, in some cases very
12 odd -- must be a design error of some sort --
13 one of the proponents I recall, he said he
14 remembered seeing it jump backwards in time,
15 the video.

16 And so I've relied on all that,
17 and those -- those are -- those are the things
18 I've pointed to here.

19 Q Is it possible that the MOVE player
20 in operation was ever able to get through an
21 entire program without interruption?

22 MS. FINGER: Object to form and
23 calls for speculation.

24 A I'm not -- I don't think -- I don't
25 know what you're reading, but my point here is

1 that the MOVE player experienced delays,
2 freezing and buffering issues, and did
3 buffering, and so -- I cited to various
4 deposition transcripts and what I cited to here
5 in paragraph 39.

6 Q Okay.

7 When you say "buffering issues,"
8 I mean, what are you talking about? And
9 "buffering" doesn't mean delay in playback,
10 interruptions in playback, correct?

11 MS. FINGER: Object to form.

12 A What I say here is "and buffering."
13 And I think there's statements about how
14 there's no buffering or something like that in
15 some documents that I've seen of MOVE's.

16 And so there is most definitely
17 buffering, but there also is most definitely
18 freezing, and that's what I'm pointing to here.

19 And if you look at these
20 citations -- we can look through them one by
21 one to see --

22 Q Okay.

23 A -- what I've cited to, but I believe
24 they're -- my statements are supported by these
25 citations.

1 Q Okay. Let's just eliminate -- let me
2 be clear.

3 "Buffering" in the art could
4 have multiple meanings. It could be an
5 interruption in playback or it could just mean
6 storing data in a buffer, correct?

7 MS. FINGER: Object to form.

8 Q It could mean other things as well,
9 but I'm just trying to establish it could have
10 multiple meanings, correct?

11 MS. FINGER: Object to form.

12 A I think we can look at these
13 citations if you wanted to do that, but
14 certainly there are delays and freezing --

15 Q Okay.

16 A -- as admitted by -- in these
17 deposition transcripts, by the MOVE player.
18 And so that's clear that they're -- you know,
19 that supports my statements in paragraph 39.

20 Q Okay.

21 By "freezing," you mean an
22 interruption in playback, correct?

23 MS. FINGER: Object to form.

24 A Well, I think -- I think Dr. Jeffay
25 may say -- we can look at that, but I think he

1 said that that was -- I don't remember how he
2 characterized it. We can look at those.

3 But I think if you look at those
4 excerpts, I think they support what I'm saying
5 here, which is that the -- that the MOVE
6 product experienced delays, freezing and
7 buffering, and that is why the -- despite the
8 patent owner contending that the product meets
9 the continuous playback limitations, and
10 therefore, that testimony and the declarations
11 in support of the patent owner responses
12 confirm that "continuous playback" does not
13 mean completely uninterrupted.

14 Q Have you concluded that in the MOVE
15 player every time a user watched a program
16 there was at least one freeze?

17 MS. FINGER: Object to form.
18 Scope. Calls for speculation.

19 A I don't know what you're referring to
20 in my -- in my -- I mean, I don't have my
21 supplemental declaration memorized, but I don't
22 recall writing exactly what you just said there
23 in my supplemental declaration.

24 Q Right. Okay.

25 I'm just talking -- in

1 paragraph 39, you have the sentence beginning
2 "But."

3 Do you see that sentence?

4 A Yes.

5 Q Okay.

6 So that's the sentence I'm kind
7 of interested in understanding what you mean
8 here when you say it experienced freezing.
9 That's what I'm trying to find out.

10 Are you saying every time the
11 user used the MOVE product, it would have
12 frozen during playback?

13 MS. FINGER: Object to form.
14 Scope. Calls for speculation.

15 Also, Counsel, if you could
16 please speak up, that would be helpful. I'm
17 having trouble hearing the questions.

18 A My opinion is exactly what's written,
19 which is, "But the MOVE product experienced,
20 for example, delays, freezing, and buffering,"
21 and I provide citations that talk about
22 instances of such -- of these types of -- what
23 I'm -- what I'm saying here.

24 And I believe if we look at
25 them, I provide -- that's the support I provide

1 for my statements here. And there certainly
2 were instances that -- that some of the people
3 I cited to in their depositions talked about
4 some of these issues, and especially some that
5 must be caused by some design issues, such as,
6 you know, a video jumping backwards in time
7 inexplicably, which I kind of remember someone
8 said at some point in their deposition.

9 Q Is it possible to have -- just
10 thinking generally about communicating media
11 files at the time of the priority date of the
12 patents-in-suit here, is it possible that you
13 could experience -- the user could experience
14 packet loss during a stream?

15 MS. FINGER: Object to form.
16 Scope.

17 A Are you referring to something that
18 I've talked about in maybe a background section
19 of any of my declarations?

20 Q Sure. Would it help if we tied the
21 question to a particular paragraph/section? Is
22 that what you're saying?

23 A It would be helpful if you're
24 referring to something in my declarations and
25 that's what you're thinking of when you ask

1 this question, to know what you're looking at
2 in my declarations.

3 Q Sure.

4 Do you have a background section
5 in your declaration that talks about prior art
6 playback?

7 MS. FINGER: Object to form.

8 A I thought you had one in mind. I can
9 look.

10 Q Sure, why don't you take a look.

11 A Are you saying you don't have one in
12 mind?

13 Q I don't, no. I was asking generally
14 in your view is it possible to have packet loss
15 during a media stream at the time of the
16 invention.

17 MS. FINGER: Same objections.

18 A Are you asking about -- what layer
19 network are you referring to?

20 Q Yeah.

21 So the layers that I refer --
22 recall you talking about were the application
23 layer and the transport layer in your
24 declaration; is that right?

25 Were there any other layers that

1 you mentioned?

2 MS. FINGER: Object to form.

3 A I -- I recall something of those, but
4 I'd have to flip through my declaration to try
5 to find what you're -- what you're referring
6 to.

7 Q Right. Okay. Why don't we take
8 another break. Another ten.

9 MS. FINGER: Okay.

10 (Recess.)

11 BY MR. WILLIAMS:

12 Q Do you have Tab 3 there?

13 A I have a Tab 3.

14 Q So it's a document entitled
15 "Declaration of Henry Houh, PhD, in Support of
16 Petition for Inter Partes Review of US Patent
17 No. 8,868,772," correct?

18 A That's what I have on my Tab 3.

19 Q Okay, great.

20 And it's got your signature at
21 the end? Or, I'm sorry, there's a CV at the
22 end, but your signature is at the end of the
23 actual document, correct?

24 A Yes, page 80.

25 Q Yeah.

1 And this is the opening
2 declaration you submitted in connection with
3 the '772 patent IPR, correct?

4 A That's right.

5 Q Okay.

6 If you turn to page, I guess,
7 54. Well, if you use the affixed Bates number,
8 the page number is 59.

9 A Okay.

10 Q Okay.

11 Do you see a flowchart on that
12 page?

13 A I see -- yeah, I -- I do.

14 Q Okay.

15 And that's a flowchart -- that's
16 an annotated flowchart from Leaning, correct?

17 A Yes.

18 Q Handing you what was previously
19 marked as Exhibit 1004, and this is -- this
20 is --

21 MS. OSMAN: Counsel, do you have
22 a copy for me as well?

23 Q This is an international patent
24 publication.

25 Do you recognize this document?

1 A Just to clarify, I think Exhibit 1004
2 is the same across the three cases, but at
3 least if this is 1004 for the '772 matter, I am
4 referring to this, and this is the Leaning --
5 the Leaning reference.

6 Q Okay.

7 And the flowchart that's on
8 page 54 of your declaration there, that's the
9 one that appears on -- I guess it spans -- the
10 whole flowchart spans from pages 9 to 11 of
11 Leaning, correct?

12 A Right. The excerpt is from page 10,
13 I believe.

14 Q Okay.

15 All right. So you can go back
16 to your supplemental declaration now, which I
17 think is Tab 4.

18 A Okay.

19 Q Okay.

20 So if you turn to paragraph 48?
21 Do you see that?

22 A Yes.

23 Q You refer in paragraph 48 to a
24 flowchart on page 10 of Leaning.

25 Is that the flowchart we were

1 just looking at?

2 MS. FINGER: Object to form.

3 (The deponent read the
4 document.)

5 A So just to be clear, I am referring
6 to the flowchart on page 10, the actual
7 flowchart, not the annotated one from earlier,
8 which I -- may not include the first line I'm
9 talking about.

10 So -- and what I'm explaining
11 here is -- just to be clear, page 10 at the
12 top, the first line, is in the middle of the
13 flowchart, but I do talk about how at the top
14 of page 10 Leaning sets the current sub-file to
15 000000.bin.

16 Q Let me just unpack that.

17 So your opening declaration, the
18 excerpt of the flowchart depicted didn't go all
19 the way to the top of page 10; is that what
20 you're saying?

21 A That's right, it was an excerpt of
22 the flowchart on page 10.

23 Q But in paragraph 48, you're
24 describing how the flowchart works beginning at
25 the top of page 10, starting with the line "Set

1 current sub-file"; is that right?

2 MS. FINGER: Object to form.

3 A Yes. So the description in 48, even
4 though it's actually the middle of the
5 flowchart that spans from page 9 to 11, I'm
6 referring to the first line on page 10 in the
7 second sentence of paragraph 48.

8 Q Okay.

9 And you're citing -- in
10 paragraph 48, you're citing to this portion of
11 the flowchart as part of your discussion about
12 how continuous -- this is within the section
13 number that you give it, I guess Roman number
14 VII, which has to do with how continuous
15 playback is obvious in view of Leaning,
16 correct?

17 MS. FINGER: Object to form.

18 A Well, there is a subsection about
19 Leaning does not describe progressive playback,
20 and that's in the sense of what Dr. Jeffay has
21 pointed to in the specification as what he
22 means that the patent is talking about as
23 progressive playback.

24 Q Okay. Let's just start with that.

25 Tell me about -- so what's your

1 view of what the patent means by "progressive
2 playback"?

3 MS. FINGER: Object to form.
4 (The deponent read the
5 document.)

6 Q Are you reading from something now,
7 by the way?

8 A Well, I recall that Dr. Jeffay
9 referred to a portion of the '772 specification
10 when -- in his discussion about progressive --
11 sorry, progressive download, and that -- sorry.

12 No, I believe he actually --
13 right. It's in Leaning, I think, is what
14 Dr. Jeffay is referring to. Let me see if I
15 can --

16 Actually, if you have
17 Dr. Jeffay's Exhibit 2141, I could look at that
18 and just be sure what I remember him referring
19 to, which might have been either Leaning or --
20 it might have been Leaning.

21 Q Yeah. Okay. We can get that for
22 you. Just give me a minute.

23 A Or maybe it's the -- I don't
24 remember. I remember Dr. Jeffay referred to
25 something that I looked at in one of the

1 documents about what -- what is meant by some
2 of the things he was talking about in that
3 paragraph.

4 Q Okay.

5 So you want to see paragraph 63
6 of Dr. Jeffay's declaration; is that right?

7 A That would be helpful, yes.

8 Q All right.

9 Okay. I'm going to hand you
10 what's been previously marked as Exhibit 2141.

11 A Thank you.

12 (The deponent read the
13 document.)

14 A So I do believe he was referring to
15 the challenged patents at the end of
16 paragraph 63. So that's -- I recall a cite
17 somewhere to it. Let me see if I can find it.

18 (Pause.)

19 Q So I don't know if it helps you, but
20 the bottom of column 1 of the patent there is
21 the word "progressive."

22 A Yes.

23 Q I think that's probably the only
24 place that word appears in the patent, if
25 that's what you're looking for.

1 A I think that was what I recall
2 Dr. Jeffay referred to.

3 Yeah, the patent describes a
4 technology known as progressive downloads. Now
5 I'm reading from column 1 at line 63.

6 "Attempts to combine the
7 strengths of the above two technologies. When
8 a progressive download is initiated, the media
9 file download begins, and the media player
10 waits to begin playback until there is enough
11 of the file downloaded that playback can begin
12 with the hope that the remainder of the file
13 will be completely downloaded before playback
14 'catches up.' The waiting period before
15 playback can be a substantial" -- sorry, "can
16 be substantial depending on network conditions,
17 and therefore is not a complete or fully
18 acceptable solution to the problem of media
19 presentation over a network."

20 So that's what I think
21 Dr. Jeffay is referring to at the end of
22 paragraph 63, which says, "This is the same
23 progressive download approach disparaged by the
24 challenged patents."

25 And my point here in this

1 section in my supplemental declaration labeled
2 A, which includes paragraphs 45 through 51, is
3 that Leaning is not describing that type of
4 progressive download as -- as -- as discussed
5 in the specifications of the challenged patent.

6 Q Okay.

7 That term that -- okay. The way
8 the term "progressive downloads" is used in the
9 challenged patents, is that -- is that the way
10 a person of ordinary skill in the art would
11 have used the term "progressive download" at
12 the time?

13 A Well, I think a person of ordinary
14 skill in the art looking at the specification
15 would understand what they're saying here --

16 Q Okay.

17 A -- as what the technology -- as
18 progressive download is what the patent owner
19 is describing as -- as progressive downloads.

20 Q Okay.

21 And the problem that the patent
22 owner here identifies with that technique is
23 that there's a waiting period before playback
24 begins, correct?

25 MS. FINGER: Object to form.

1 A It is saying that the waiting period
2 before playback -- this is the top of column 2
3 at line 2, "can be substantial depending on
4 network conditions, and therefore is not a
5 complete or fully acceptable solution to the
6 problem of media presentation over a network."

7 And that waiting period is based
8 on -- that the media player waits to begin
9 playback. This is column 1, line 65, "until
10 there is enough of the file downloaded that
11 playback can begin with the hope that the
12 remainder of the file will be completely
13 downloaded before playback 'catches up.'"

14 And that's the waiting period
15 that it's referring to. And my point here is
16 that's not what Leaning is describing. Leaning
17 is describing, really, what I'm laying out in
18 my various declarations.

19 Q So are you saying here that Leaning
20 wouldn't have this waiting period that the '772
21 patent alludes to, then?

22 MS. FINGER: Object to form.
23 Scope.

24 (The deponent read the
25 document.)

1 A I think if you look at the process
2 that I described that Leaning is talking about
3 in paragraph -- what I say in paragraph 51 is
4 that, "This process does not describe either a
5 download (which, as described above, refers to
6 obtaining an entire file locally) or waiting to
7 begin playback until enough of a file is
8 downloaded. All Leaning needs is buffered data
9 having a duration of more than the playout time
10 in order to begin playback, which may occur
11 when just a single sub-file is received and
12 downloaded."

13 And that's a case where the
14 sub-file duration can be greater than the
15 playout time T_p , and I describe that above.
16 And Leaning expressly teaches that when it
17 talks about -- I say in paragraph 46, "Leaning
18 discloses that a 'sub-file size' can be between
19 30 percent and 130 percent of the playout
20 time -- of playout time."

21 And that -- and therefore,
22 Leaning can begin playback after having
23 received just one sub-file, you know, in that
24 instance where -- where the sub-file duration,
25 the size, is 100 percent or greater of the

1 payout time.

2 And so that's what I'm
3 describing in these paragraphs. And that is
4 not what the patent is describing as waiting
5 for -- waiting to begin playback until there is
6 enough of the file downloaded that playback can
7 begin with the hope that the remainder of the
8 file will be completely downloaded before
9 playback catches up.

10 And that's what I understand
11 Dr. Jeffay is claiming, is that Leaning is
12 disclosing this -- what he says, I think, the
13 disparaged progressive download, as described
14 in the patents.

15 But I think he's incorrect when
16 he makes that comparison, because Leaning is
17 not describing progressive playback, as
18 described in the '772 patent, for the reasons
19 that I lay out in Section VII.A.

20 Q So in your answer you referred to a
21 different paragraph of your declaration
22 about -- having to do with sub-file size and
23 Tp.

24 What paragraph were you
25 referring to?

1 A I think I was reading -- if I'm -- if
2 I'm referring to the same thing you're asking
3 about, in paragraph 46, which is in
4 Section VII.A, it says, "Leaning discloses that
5 a sub-file size can be between 30 percent and
6 130 percent of playout time."

7 And I did refer to that in my
8 previous answer.

9 Q Okay.

10 Playout time is "Tp," right?

11 A Yes, I believe -- yes, playout time
12 is Tp, and that -- if you look in paragraph 49,
13 I talk about that.

14 Q Yeah, okay. So let's go to
15 paragraph 49.

16 Here, you're describing the
17 logic of the flowchart, right, on -- in
18 Leaning, page 10?

19 MS. FINGER: Object to form.

20 A I'm referring to it. I think I'm
21 describing some steps in the flowchart in
22 paragraph 49.

23 But I'm also pointing out
24 that -- that -- if you look at the totality of
25 Leaning, like Leaning is expressly disclosing

1 that sub-files, including a first sub-file, can
2 be 130 percent the size of the playout time.

3 So after having received just
4 one -- the first sub-file and being placed in
5 the playout buffer, that -- that size will
6 already exceed the playout time, and therefore
7 the device can begin playing.

8 And that is not what's described
9 as -- in the patent -- the '772 patent and the
10 other patent -- the other two patents as what a
11 progressive download is, because you've only
12 received one sub-file of the entire file and
13 you're able to begin playing, and it's not tied
14 to the conditions that -- that are outlined in
15 '772 specification as to what progressive
16 download technology is doing.

17 And so I'm pointing out here
18 that, you know, Leaning is not describing the
19 progressive playback or download that
20 Dr. Jeffay says Leaning is. I'm pointing out
21 why I disagree with Dr. Jeffay on his claim
22 there.

23 Q Okay.

24 So paragraph 46 lays out that
25 Leaning teaches the sub-file size can be

1 between 30 percent and 130 percent of playout
2 time, correct?

3 A I -- I do point that out in
4 paragraph 46.

5 Q Okay.

6 If it was -- if the sub-file
7 size is less than the playout time, then
8 multiple sub-files would have to be received
9 before playout begins in Leaning, correct?

10 MS. FINGER: Object to form.

11 A Well, in this section, I'm really
12 pointing out that the point where you could
13 just receive a single sub-file. And I'm not
14 really discussing the situations you're asking
15 about.

16 Q So you're only -- I'm sorry. So in
17 this section, you're only talking about the
18 case where the sub-file size is at least as big
19 as the playout time? Is that what you're
20 saying?

21 MS. FINGER: Object to form.

22 A Well, paragraph 46 points out that
23 Leaning is disclosing that sub-file size could
24 be smaller than the playout time, 30 percent.
25 Could be bigger. Could be 130 percent.

1 So certainly in the instance
2 where the sub-file is 130 percent, one needs --
3 the player only needs to receive the first
4 sub-file and can begin playing immediately once
5 it's decoded and placed in the buffer, because
6 that single file that's received would
7 represent more time than the playout time.

8 And so I'm pointing out that in
9 that case, Leaning can begin playing when just
10 receiving a single sub-file.

11 And it's not tied to the
12 conditions that Dr. Jeffay seems to think
13 Leaning is the exact -- or -- I don't mean to
14 mischaracterize what he says. He says what he
15 says, but I think his point is that Leaning
16 discloses using progressive download and not
17 achieving continuous playback.

18 And certainly it's not the
19 progressive download situation as described in
20 the '772 patent that Leaning is teaching,
21 because it's teaching something very different,
22 or different, which is that Leaning -- when --
23 there are situations that Leaning teaches where
24 you could just receive one sub-file of the
25 whole totality of the overall file, which is a

1 part of the whole file, and begin playback.

2 And it's not, as the '772 patent
3 describes, waiting to begin playback until
4 there is enough of the file downloaded that
5 playback can begin with the hope that the
6 remainder of the file will be completely
7 downloaded before playback catches up, and that
8 this waiting period before playback can be
9 substantial, depending on network conditions,
10 and therefore is not a complete or fully
11 acceptable solution to the problem of media
12 presentation over a network.

13 Q Sounds like you were just reading
14 from something in that answer. What were you
15 reading from?

16 A Oh, yeah, I was -- sorry, I was
17 reading from the '772 patent specification,
18 around the bottom of column 1, line 62, through
19 column 2, line 5.

20 Q So can you turn to the Leaning
21 flowchart? Do you have that in front of you?

22 A I have part of it in front of me.

23 Q I want to make sure we have a shared
24 understanding of what's being described here.

25 So there's a step J1A. Do you

1 see that step in the flowchart?

2 A Yes.

3 Q And in that step, as I understand it,
4 what the system is doing here is looking to see
5 if the buffer fullness has exceeded Tp, which
6 as you say is the playout time, correct?

7 MS. FINGER: Object to form.

8 A Sorry, where are you seeing you're
9 referring to this?

10 Q Playout -- where did you refer to the
11 Tp being playout time? That's in paragraph 46.

12 (The deponent read the
13 document.)

14 A Yeah, in paragraph 46, I'm not
15 referring to this flowchart. I'm referring to
16 text -- specification of Leaning that talks
17 about how the sub-file size can be between
18 30 percent and 130 percent of playout time.

19 Q Okay.

20 And in paragraph 49, you say,
21 "Importantly for comparing Leaning to
22 progressive download, Leaning then checks to
23 see if the buffer fullness from that single
24 file is greater than the playout time (Tp),"

25 correct?

1 A Yes, I do see that.

2 Q Okay.

3 And that's a description of
4 what's shown in step J1A of the Leaning
5 flowchart, correct?

6 A That's a summary of checking if the
7 buffer fullness is greater than Tp seconds, and
8 so that -- that is -- I think that's -- that's
9 why I'm citing to the flowchart at the end of
10 that sentence.

11 Q Correct, yeah.

12 So my understanding of what's
13 shown in step J1A was correct, then, right?
14 That's what step J1A is saying? It checks the
15 buffer fullness and compares it to Tp and sees
16 if it's bigger than Tp, correct?

17 MS. FINGER: Object to form.

18 A Sure. I guess that's not all it's
19 saying, but there is a step J1A that I'm
20 describing here that Leaning then checks to see
21 if the buffer fullness from that single file is
22 greater than the playout time.

23 But the single file that I'm
24 referring to is when the sub-file size is -- I
25 think the example -- I might have picked

1 130 percent, but it could be 100 percent or
2 greater -- or greater than 100 percent of
3 the -- of the Tp.

4 So any of those cases that
5 Leaning expressly is disclosing that the
6 sub-file size can be will -- will trigger this
7 situation that I'm describing in paragraph 49,
8 which is, if it is, Leaning proceeds to step
9 J3, begin/continuing playback.

10 Q Okay.

11 And if that -- if that condition
12 were not true, if the buffer fullness were less
13 than Tp, what would happen then?

14 A Well, in the flowchart, the next step
15 if you do not go to step J3, which jumps around
16 a couple of the next steps, would be J2, which
17 is to increment the current sub-file, and then
18 go to step J1.

19 And so in that situation,
20 that's -- that's what this example flowchart
21 would indicate.

22 Q Okay. All right.

23 And then in paragraph 51, the
24 last sentence of that, back in your
25 declaration, Dr. Houh, the last sentence is,

1 "All Leaning needs is buffered data having a
2 duration of more than the playout time in order
3 to begin playback, which may occur when just a
4 single sub-file is received and decoded."

5 Do you see that?

6 A Yes.

7 Q Okay.

8 So when you say "which may
9 occur," what you mean there is that if -- if I
10 understand you correctly, what you mean there
11 is that if there is a single sub-file that's
12 bigger than the playout time, then this would
13 be true, correct?

14 MS. FINGER: Object to form.

15 A Well, there's a situation where all
16 Leaning needs is -- well, all Leaning needs is
17 buffered data having a duration of more than
18 the playout time. And there are situations
19 which may occur that Leaning expressly is
20 disclosing that there's a single sub-file is
21 greater, up to 130 percent, of the -- of the
22 Tp, which would cause -- you know, anything
23 greater than 100 percent of Tp would cause
24 Leaning to begin playback after receiving just
25 a single sub-file that is received and decoded

1 and placed in the buffer.

2 And the point here is that this
3 process is not describing either a download,
4 which described in the -- which is getting the
5 whole file, or waiting to begin playback until
6 enough of a file is downloaded, which is --
7 which is referring to what the '772 patent is
8 saying, that there's enough of the file
9 downloaded that playback can begin with the
10 hope that the remainder of the file will be
11 completely downloaded before playback catches
12 up.

13 And so that's not -- neither of
14 the situations is what Leaning does, of those
15 situations. Leaning can, in some
16 circumstances, just receive a single sub-file
17 before it begins playback.

18 Q All right. Let me just direct you
19 down to paragraph 58 of your supplemental
20 declaration for a moment.

21 The bottom of page 39, you say,
22 "I then go on to explain upshifting (including
23 the 'Stepup' process described in the
24 flowchart) in greater detail in view of the
25 language in the same limitation reciting 'the

1 highest quality copy of the video that is
2 determined to be sustainable.'" And then you
3 cite paragraph 92 of your opening declaration.

4 Do you see that?

5 A Yes, I think so.

6 Q Okay.

7 And that opening declaration, I
8 believe, is the one you opened earlier. It's
9 Tab 3.

10 A I think that was right.

11 Q Okay.

12 And then the paragraph that you
13 cited there was 92, and that's the paragraph
14 where that annotated flowchart appears,
15 correct?

16 A Yeah, there was a bunch of text with
17 the annotated flowchart, but yes, that
18 annotated flowchart is at the end of
19 paragraph 92.

20 Q Okay.

21 And this is -- this is in your
22 discussion of claim element 1[E] of the '772
23 patent, correct?

24 A Yes, paragraph 92 is -- is under the
25 1[E] discussion in my original opening

1 declaration.

2 Q Okay.

3 That's the only paragraph --
4 Section 1[E] has only one paragraph, right?
5 It's just paragraph 92?

6 MS. FINGER: Can you repeat the
7 question? I couldn't hear you.

8 Q Section 1[E] has only one paragraph,
9 right? It's just paragraph 92?

10 A Well, within paragraph 92, I do refer
11 back to elements 1[C] and 1[E], so there's
12 further analysis that I'm referring to.

13 But yes, I mean, under 1[E] is
14 just one paragraph.

15 Q Okay. Sorry. Back to supplemental
16 declaration paragraph 58 where you're talking
17 about that.

18 A Okay.

19 Q You're citing the stepup process here
20 in paragraph 58 as being part of your analysis
21 of how Leaning achieves continuous playback; is
22 that right?

23 MS. FINGER: Counsel, can you
24 please repeat the question? I really can't
25 hear you.

1 MR. WILLIAMS: Okay. Can you
2 read it back?

3 (Record read as requested.)

4 MS. FINGER: Object to form.

5 (The deponent read the
6 document.)

7 A Well, I mean, paragraph 92 is not
8 only citing to the flowchart, but it cites to
9 some text which also says, for example, in
10 Leaning, at column 8, lines 24 to 26, "if the
11 measured rate exceeds not only the current rate
12 but also the next higher rate for a given
13 period of time (e.g. 120 seconds: this could if
14 desired be made adjustable by the user)" -- so
15 that's referring to the 120 seconds -- but "for
16 a given period of time increase the current
17 rate."

18 And then -- you know, so that's
19 also describing stepup.

20 But, I mean, I think stepup
21 is -- is a label within the flowchart as well,
22 the flowchart on page -- partly on page 10.

23 Q When you say -- sorry, when you say a
24 "label," what do you mean?

25 A Well, flowcharts -- there is a label

1 in -- in the flowchart. If you look at my
2 annotated excerpt on page 54, there's a stepup,
3 colon. That's what I mean by that it's a
4 label, which is when you have a label, you can
5 refer to it in other -- other places in the
6 flowchart that say "goto Stepup."

7 And then I think I may have
8 omitted some stuff between there, because "goto
9 Stepup" is J1 -- J1 -- the top excerpt is J1A
10 down to the left column just above "input of
11 user commands."

12 And then stepup is the
13 fourth -- fourth row -- the fourth marked row
14 under that. And so, you know, there is an
15 omission of the intervening steps.

16 But when you do a goto in this
17 type of flowchart, I think a person of ordinary
18 skill would understand that you're now -- under
19 that condition, you would jump down to the
20 stepup.

21 Under that condition in the
22 flowchart block of J4, that that's one
23 condition that would take you to a stepup
24 portion of the flowchart. So that's what I'm
25 referring to, and that's what I mean that it's

1 a label.

2 Q So the annotations that you put on
3 the flowchart on your original declaration
4 show, then, the progression through this
5 flowchart; is that right?

6 The red arrows are intended to
7 indicate how the logic would progress as you
8 went through the flowchart under this
9 condition?

10 MS. FINGER: Object to form.
11 (The deponent read the
12 document.)

13 A Well, there are intervening steps in
14 the flowchart that may or may not occur. But
15 what I'm showing is that, you know, at J1A,
16 there's this test to see if the buffer fullness
17 is greater than Tp seconds. Then go to step
18 J3. And I kind of describe part of that as the
19 flowchart beginning with step J1A, moving
20 through the process.

21 But then I kind of start the
22 discussion -- the next discussion where I've
23 got the -- in the row where I've got the
24 description of goto Setup [sic] or where it
25 says "goto Setup," and I describe that -- moves

1 through the process, and if MRate, which is
2 measured rate, is greater than NextRate, which
3 is the next higher rate, and NextRate is not
4 equal to 0, that there exists a higher rate,
5 then goto Stepup.

6 That's -- I'm not really
7 strictly talking about all these middle steps,
8 but -- but -- but as part of block J4, there
9 are -- in a flowchart, there are a number of
10 particular --

11 You've seen flowcharts which
12 have a -- decisions are usually like a diamond,
13 and there are labeled conditions leaving a
14 flowchart that -- in this case, three different
15 ones -- that would be evaluated to see what the
16 J4 flowchart block does.

17 And one of those -- one of those
18 arrows leaving that block goes to Stepup. And
19 the condition on that arrow would be as I'm
20 describing in -- in the paragraph 92.

21 Q Returning to your supplemental
22 declaration, going down to paragraph 59. Do
23 you see that paragraph?

24 A Yes, I do.

25 Q In there, you say, in part, "the

1 'clear buffer' is not a required step."

2 Do you see that?

3 MS. FINGER: Object to form.

4 A Yeah, in the second to last line, I
5 think you -- that is when I say "the 'clear
6 buffer' is not a required step."

7 Q Yes.

8 And you have "clear buffer" in
9 quotes there. So what are you referring to
10 there?

11 A So I'm referring to, I think, what
12 one of the steps that Dr. Jeffay is referring
13 to in his declaration in paragraphs 72 and 73.

14 And in those paragraphs, he's
15 got the same excerpt of my annotated one, but
16 he's added additional yellow highlights. This
17 is not in color, so they're gray.

18 But --

19 Q Sorry, what page? I'm sorry --

20 A Sorry, this is page 40 of
21 Dr. Jeffay's declaration, Exhibit 2141 to this
22 '772 matter.

23 And so "clear buffer," in
24 quotes, is a step or a -- something in the
25 flowchart.

1 And he's saying -- I'm just
2 replying to Dr. Jeffay's arguments that he
3 contends that Leaning -- the playback in
4 Leaning is, in fact, not continuous but rather
5 interrupted every time a rate shift is
6 performed.

7 And I'm just responding to his
8 arguments, his -- his opinion that -- that it's
9 not a required step and playback is not
10 interrupted every time a rate shift is
11 performed.

12 And this is -- and the reasons
13 here in this section are in support of my
14 reasons why I disagree with Dr. Jeffay on that
15 point.

16 Q Part of your answer is a little
17 unclear to me. You said I'm just responding to
18 his argument, his opinion that it's not a
19 required step.

20 But as I understand it,
21 Dr. Jeffay is saying it is a required step,
22 correct?

23 A So --

24 Q Maybe there was a double negative.

25 A Yeah, maybe I inserted an extra

1 negative by mistake. I'm not sure what the
2 transcript actually says.

3 But, yes, Dr. -- Dr. Jeffay is
4 contending that playback in Leaning is not
5 continuous but rather interrupted every time a
6 rate shift is performed. And he points to this
7 clear buffer as -- as evidence that it clears
8 the buffer and then waits until the buffer is
9 refilled, and then --

10 So my point is that I disagree
11 with Dr. Jeffay's contention that in Leaning,
12 clear buffer would be -- that there's an
13 interruption every time, and I think he's
14 referring to the clear buffer as evidence of
15 that.

16 And so my point is that this
17 misunderstands Leaning and ignores Leaning
18 express disclosures that, while helpful in some
19 instances, the clear buffer is not a required
20 step and playback is not interrupted every time
21 a rate shift is performed, as Dr. Jeffay
22 contends.

23 And I give -- I've given
24 those -- I give -- I think I -- I think the
25 next section talks about that.

1 But I think also in my original
2 declaration, I cite to the part of Leaning that
3 discloses using -- that refers to using --
4 up-sampling everything to the highest rate and
5 converting mono to stereo so that certain steps
6 would not be necessary.

7 Q Okay.

8 Referring back to what you say
9 here in paragraph 59, then, the "clear buffer"
10 in quotes, that's then -- that's referring to
11 the words "clear buffer" that appear in the
12 Leaning flowchart under Stepup, correct?

13 A I think that's -- yes, that's why I'm
14 quoting it, to indicate that that's what I
15 believe Jeffay's -- Dr. Jeffay is referring to
16 in his analysis.

17 Q Okay.

18 So then in your analysis, would
19 the clear buffer step be performed or not?

20 (The deponent read the
21 document.)

22 A So the next section kind of clarifies
23 this, which if you look at paragraphs --
24 starting on paragraph 61. But in paragraph 63,
25 I talk about how -- how the result --

1 This is the last sentence of
2 paragraph 63. "The result is that the system
3 disclosed in Leaning can rate shift without
4 clearing the buffer and without interruption."

5 And then I have some more
6 discussion. And, you know, I know I have some
7 discussion in my opening declaration as well on
8 this, which I refer back to I think in -- maybe
9 in --

10 I'm not sure where, but in
11 another portion I kind of refer back to my
12 analysis in my original declaration as part of
13 my rebuttal to Dr. Jeffay's arguments.

14 Q Okay.

15 So that last sentence of
16 paragraph 63 you pointed me to says, "The
17 result is that the system disclosed in Leaning
18 can rate shift without clearing the buffer and
19 without interruption."

20 Is that the sentence that you're
21 referring to?

22 A I was referring to that, but that's
23 in the paragraph that starts, "To avoid the
24 need to reset, which would create an
25 interruption, Leaning explains that the 'sound

1 card could be run continuously at the highest
2 sampling rate envisaged.'" And that "Leaning
3 next" -- and I cite to Leaning.

4 And "Leaning next describes that
5 when there is 'buffer underflow,' i.e.,
6 interruptions in output, Leaning will rate
7 switch downwards to avoid that interruption 'in
8 the majority of cases' by leveraging 'automatic
9 data rate switching downwards."

10 And "The result is that the
11 system disclosed in Leaning can rate shift
12 without clearing the buffer and without
13 interruption."

14 And I think there's further
15 discussion in the next paragraph, for example,
16 with respect to video. And then I know there's
17 discussion in my original declaration, I think,
18 about -- about Leaning's behavior for the sound
19 card being run continuously at the highest
20 sampling rate envisaged.

21 I certainly refer to a part that
22 discusses that -- that part of Leaning in my
23 original declaration.

24 Q Okay.

25 So maybe you can explain this to

1 me, then. In paragraph 63, you say "to avoid
2 the need to reset."

3 What is the reset you're talking
4 about there?

5 A So I -- in paragraph 62, I'm talking
6 about the -- as I explain in my original
7 declarations, "Leaning also discloses that
8 'interruption can be avoided.'" And I cite to
9 Leaning.

10 And "Specifically, Leaning first
11 describes that existing interruptions to audio
12 output when rates are switched resulted from
13 'conventional sound cards' having to 'reset in
14 order to change sampling rate,'" and I cite to
15 Leaning.

16 "This need arose in the context
17 of conventional sound cards because those early
18 sound cards had fixed internal clocks tied to
19 the actual circuitry of the device. Changing
20 the rate of processing required actually
21 reconfiguring the circuitry during the reset."

22 So the reset that I'm referring
23 to is in Leaning, which is here. Leaning in a
24 cited passage, 14:25 -- oh, here's the typo.
25 It says 25 to 20. It should be 25 to 30. This

1 is the bottom of page 40 in paragraph 62. So
2 that was the typo I was thinking of that I saw
3 earlier.

4 So that -- that section talks
5 about how "Many conventional sound cards,
6 although capable of operating -- operation at a
7 range of different settings, require resetting
8 in order to change sampling rate, and
9 necessarily this causes interruption to -- in
10 its audio output."

11 And then it goes on. Then it
12 says, "Thus in a further modification, we
13 propose that the sound card could be run
14 continuously at the highest sampling rate
15 envisaged." And I cited that. We talked about
16 that earlier.

17 And then it continues, "When the
18 player program is supplying, to the buffer,
19 data at a lower sampling rate, this data is
20 then up-sampled to this highest rate before or
21 after the buffer. Similarly, if the card is
22 always operated in stereo mode, decoded mono
23 signals can be fed in parallel so feed both the
24 left and right channels of the sound card
25 input."

1 That probably was a typo, "to
2 feed both." But I think a person of ordinary
3 skill would understand what Leaning is saying.

4 "Again, if the number of bits
5 per sample of the decoded signal is lower than
6 expected by the card, the number of bits can be
7 increased by padding with zeros."

8 So Leaning is expressly
9 disclosing a situation that can avoid having to
10 have to reset the card, to change the sampling
11 rate by doing this up-sampling and thus avoid
12 altogether the need to do any resetting of the
13 card even when changing sampling rates for
14 audio.

15 Q Now, is there a connection in your
16 mind between resetting the card and the step of
17 "clear buffer" in Leaning's flowchart?

18 MS. FINGER: Object to form.

19 (The deponent read the
20 document.)

21 A Well, in the situation where the
22 card -- you have -- you're using -- in the mode
23 where you do reset the card because the
24 limitation of these early sound cards, I
25 think -- as I say in paragraph 80, "A person of

1 ordinary skill in the art would understand from
2 Leaning that clearing the buffer refers to
3 actually playing out the sub-files in the
4 buffer, not discarding them."

5 And then in the situation where
6 you're actually resetting the card to change
7 the sampling rate, which is not what I referred
8 to in my opening dec- -- while I have referred
9 in my opening declaration to the -- the part of
10 Leaning that is discussing the -- the use of
11 up-sampling and converting mono to both stereo
12 channels and up-sampling the bits to the
13 full -- full bits -- that's what we just saw, I
14 refer to that.

15 But in a situation where a card
16 would be reset, a person of ordinary skill
17 would understand from Leaning that this
18 clearing the buffer actually refers to playing
19 out the sub-files in the buffer, not discarding
20 them.

21 And then you could change the
22 rate and then add -- add new files -- new audio
23 to the buffer that was sampled at the different
24 rate, for example.

25 And "Leaning highlights that the

1 'first sub-file received for a new rate'
2 actually 'continues from the same point in the
3 recording that the last sub-file at the old
4 rate ended,' indicating that there are not any
5 sub-files in between that are being discarded."

6 And so the sub -- "Further, the
7 sub-files in the buffer have already been
8 received and decoded. It would be inefficient
9 and undesirable to redo that process, which
10 would add roundtrip time for data transmission
11 and occupy bandwidth."

12 Q Do you remember what the question
13 was?

14 A I think you asked about a connection
15 between clear buffer and reset, but I wouldn't
16 say that -- that -- I described a situation
17 where the resetting will be obvious to a POSITA
18 if -- if the situation arose that it's the
19 sound card that needed to be reset, the clear
20 buffer would mean to a person of ordinary
21 skill, they would understand that "clear
22 buffer" refers to playing out the sub-files in
23 the buffer at the old rate so that when the
24 card is then reset after the buffer has been
25 cleared by playing out the old samples at the

1 previous rate, that resetting the card would
2 then allow new samples to be added to the
3 buffer at the new rate.

4 But what I relied on, certainly
5 one -- at least I did rely on in my opening
6 declaration the situation that referred to --
7 what we discussed earlier is how Leaning is
8 expressly teaching that you can avoid the need
9 to even have to do this reset, and thus avoid
10 any need to -- to do the reset by up-sampling
11 everything to the highest rate the card can
12 handle, and then, you know, copying a mono to
13 stereo and then up-sampling the bits to the
14 extent they're different than -- to the highest
15 sample bit size of the -- of the card.

16 So we saw that earlier, and that
17 certainly was something I referred to in my
18 opening declaration that referred to this
19 situation.

20 Q You said a POSITA would have
21 understood that "clear buffer" in Leaning is
22 continuing to play out the buffer; is that
23 right?

24 A What I say is, "A person of ordinary
25 skill in the art would understand from Leaning

1 that clearing the buffer refers to actually" --
2 in this situation -- "playing out the sub-files
3 in the buffer."

4 That would be included with --
5 in what a person of ordinary skill in the art
6 would understand would be part of clearing --
7 clearing the buffer, playing out the sub-files
8 in the buffer and not discarding them.

9 Q Was there a particular paragraph you
10 were referring to there in that answer?

11 A I was probably reading from
12 paragraph 80 in my supplemental declaration.

13 Q Okay.

14 And in paragraph 77, you refer
15 to "clear buffer" as being an option, right?

16 (The deponent read the
17 document.)

18 A I mean, I say that "Dr. Jeffay's next
19 arguments relating to why clearing a buffer
20 results in interrupted playback are, therefore,
21 irrelevant in the context of Leaning, which
22 presents the 'clear buffer' step as an option."

23 Q Okay.

24 So it's an option in Leaning,
25 then, to perform the step of continuing to play

1 out the sub-files in the buffer; is that right?

2 MS. FINGER: Object to form.

3 A So the point here is that Dr. Jeffay
4 is referring to the inclusion of the clear
5 buffer step in the flowchart -- and I'm reading
6 from paragraph 76 -- "to conclude that Leaning
7 requires clearing the buffer every time a rate
8 shift occurs."

9 And I think in -- and what I
10 understand of what Dr. Jeffay is saying, that
11 clear buffer -- he's saying that it's just
12 discarding all the data, and that's why there's
13 interrupting -- that's why it's interrupting
14 the playback.

15 If he -- if he -- if he -- if he
16 understood what a -- what I think a POSITA
17 would understand, that clear buffer can also
18 include just playing out the samples, which
19 results in a clear buffer, I don't think he
20 would say that there was interrupted playback.

21 So I think it's that -- under
22 Dr. Jeffay's thinking, that might be the case.
23 But I think that's not the correct
24 interpretation of Leaning.

25 Q So what is the clear -- what is the

1 POSITA's correct interpretation of "clear
2 buffer" in Leaning, then?

3 MS. FINGER: Object to form.

4 A So partly the -- also the clear
5 buffer as an option is that, you know, there
6 are situations where there's no need to even
7 think about clearing buffer or resetting the
8 card where you up-sample.

9 But as I say in paragraph 80, "A
10 person of ordinary skill in the art would
11 understand from Leaning that clearing the
12 buffer refers to actually playing out the
13 sub-files in the buffer, not discarding them."

14 And that -- that there's not
15 even a need to reset the card in that case
16 because if you're up-sampling everything before
17 you put data into the buffer, then there's no
18 need for clearing the buffer, as Dr. Jeffay
19 understands it, or to resetting the card, which
20 would not be necessary in a situation that I
21 have referred to that Leaning teaches.

22 Q You said there's no need to clear --
23 no need to clear the buffer, as Dr. Jeffay
24 understands it, or reset the card.

25 Are those the same thing or are

1 they different?

2 A Well, the -- the -- what Leaning
3 discloses about the reasons to reset the card
4 are you have samples -- that there's -- that
5 the rates are tied to actual internal circuitry
6 of the card.

7 I'm paraphrasing a little bit.
8 I'll refer back to the actual citations in
9 Leaning that describe it.

10 But -- so if there's a need to
11 reset the card, then you actually need to have
12 a clear boundary between before the reset and
13 after the reset, because if you're changing the
14 rate, then you need to track -- you have the
15 data at the old rate and you have data at the
16 new rate.

17 And in that case, you would make
18 the reset of the card at the boundary between
19 those rates, and you -- a POSITA would
20 understand you play out all the old data,
21 thereby clearing out the buffer at the old rate
22 before resetting the card and playing back the
23 new data at the new rate.

24 But that's all avoided if
25 everything's up-sampled, as Leaning is

1 teaching, to the highest rate the card can
2 sustain before you put data in the buffer,
3 because all the data in the buffer is at a rate
4 the audio card is currently supporting, that is
5 the highest rate, and there's no need to ever
6 think about the clear buffer step and reset
7 because you can just continuously put audio
8 data into the buffer at the highest rate that
9 the card is capable of handling.

10 And that -- it's just a
11 continuous process without the need to think
12 about clearing the buffer and resetting the
13 card to adjust for a new rate, and then adding
14 new data at a different rate to the buffer for
15 further playback.

16 So I think that's what a POSITA
17 would understand from the teachings of Leaning,
18 especially in light of some of the other
19 express disclosures in Leaning where "the first
20 sub-file received for a new rate continues from
21 the same point in the recording that the last
22 sub-file at the old rate ended, indicating" --
23 I'm reading from paragraph 80 -- "indicating
24 that there are not any sub-files in between
25 that are being discarded."

1 Q Let me ask you -- actually, this is
2 probably a good time to break for lunch.

3 MR. WILLIAMS: It's here, right?

4 MS. FINGER: Yes, it's back
5 there.

6 MR. WILLIAMS: All right. Let's
7 take a break for lunch.

8 (Lunch recess.)

9 BY MR. WILLIAMS:

10 Q If you turn to paragraph 59 of your
11 declaration again.

12 Do you still have it up?

13 A I do still have it up. I can turn
14 there now.

15 MS. FINGER: Which declaration,
16 Counsel?

17 MR. WILLIAMS: The supplemental
18 declaration.

19 Q Correct? That's the one you have in
20 front of you?

21 A Yes. I'm at paragraph 59.

22 Q Okay.

23 That's -- okay. So there you
24 say "the 'clear buffer' is not a required
25 step."

1 So what's your view about when
2 Leaning would perform the "clear buffer" step?

3 MS. FINGER: Object to form.

4 (The deponent read the
5 document.)

6 A That's not really the focus of the
7 subsequent paragraphs after paragraph 59.

8 What I'm describing there is
9 that -- if you look in paragraph 63, I'm
10 describing a situation in paragraph 63 where --
11 "Leaning will rate" -- I'm reading from the
12 middle.

13 "Leaning will rate switch
14 downwards to avoid that interruption 'in the
15 majority of cases' by leveraging 'automatic
16 data rate switching downward." And that "The
17 result is that the system disclosed in Leaning
18 can rate shift without clearing the buffer and
19 without interruption."

20 And I'm citing both --
21 Exhibit 1004, which is Leaning, at lines 15, 3
22 through 8, and that is what I cite in my
23 original analysis of -- in the '772 patent, I
24 think in paragraph 91 of my '772 opening
25 declaration.

1 But that paragraph actually
2 refers to a situation that's described in the
3 previous paragraph, which I think is -- starts
4 at the bottom of page 14, which is that "the
5 sound card could be run continuously at the
6 highest sampling rate envisaged," and I do cite
7 to that in paragraph 63 here.

8 But that -- I am discussing in
9 that context in my original opening declaration
10 this exact situation.

11 So in this case, it's -- the
12 result is that the system disclosed in Leaning
13 can rate shift without clearing the buffer and
14 without interruption.

15 So the focus is this -- what I
16 pointed out in my original declaration, a
17 situation where there's no need to clear the
18 buffer or -- because you can continue to just
19 place data in the buffer by running the sound
20 card continuously at the highest sampling rate
21 and placing all the data in the buffer at
22 that -- up-sampling to the highest sampling
23 rate.

24 Q Okay.

25 So the section -- let's turn to

1 that section of Leaning that you were talking
2 to, the paragraph on page 15, line 3, begins on
3 page 15, line 3.

4 A Yes.

5 Q Okay.

6 That paragraph mentions the
7 possibility of interruptions in the output,
8 correct?

9 A Well, actually, what it says is,
10 "with this modification such interruption can
11 be avoided."

12 And what it's referring to at
13 "this modification" is, if you look at the
14 paragraph that precedes it, it's talking about
15 operating the sound card at the highest
16 sampling rate, and that's -- that's what it's
17 referring to in terms of this modification.

18 And it's -- it's -- and this is
19 what I'm relying on, both what I'm discussing
20 here and in my original declaration where I
21 cite to page 15, of this same section, right
22 about this same section.

23 And it's saying that the
24 interruption that it's referring to can be
25 avoided. "And therefore it is preferable to

1 employ a criterion which anticipates underflow
2 and avoids it in the majority of cases."

3 So it's actually saying that
4 it's able to avoid the interruptions.

5 Q Right.

6 So this paragraph, then, that
7 begins at line 3 and goes to about line 8 of
8 Leaning is discussing a modification to avoid
9 interruption of playback, correct?

10 MS. FINGER: Object to form.

11 A Well, it's what's taught by Leaning
12 in the previous paragraph, which is running the
13 sound card continuously at the highest sampling
14 rate envisaged. And there's further stuff
15 about stereo and sample size.

16 But effectively, what it's doing
17 is that it's teaching that you can put data
18 into the buffer and up-sample it and do all the
19 other mono-to-stereo conversions and bit size,
20 sample size conversions before placing into the
21 buffer so that -- and that's the modification
22 it's referring to.

23 But it's expressly taught by
24 Leaning as to what you can do, and so that's
25 what that paragraph 15 is referring to.

1 Q I think we're saying the same thing.

2 Leaning is teaching a
3 modification that eliminates interruptions in
4 the output here, correct?

5 MS. FINGER: Object to form.
6 Asked and answered.

7 A Leaning is saying that this
8 modification -- with that modification,
9 interruption can be avoided.

10 Q Okay.

11 And the modification that he's
12 talking about there involves, in your opinion,
13 what, exactly?

14 Can you just describe that for
15 me?

16 MS. FINGER: Counsel, I can't
17 hear you. Can you repeat the question?

18 Q What is the modification that he's
19 talking about here?

20 (The deponent read the
21 document.)

22 A It's what Leaning's teaching, but
23 then with the -- with the ability to up-sample,
24 as described in the previous paragraph, to
25 avoid having to reset the board and -- and

1 then, you know, it says in line -- line 28 --

2 Q Sorry, are you on page 15 or --

3 A Sorry, yeah, page 14. "Many
4 conventional sound cards, although capable of
5 operation at a range of different settings,
6 require resetting in order to change sampling
7 rate, and necessarily this causes an
8 interruption in its audio output."

9 But with the modification of --
10 and then it says, "Thus in a further
11 modification, we propose that the sound card
12 could be run continuously at the highest
13 sampling rate envisaged. When the player
14 program is supplying, to the buffer, data at a
15 lower sampling rate, this data is then
16 up-sampled to this highest rate before or after
17 the buffer." And that can be before the
18 buffer, so you can place into the buffer the
19 data at the highest sampling rate.

20 And so -- and then it goes on to
21 describe stereo and -- and sample size, but,
22 you know, it's -- it's basically saying you can
23 run everything in stereo, and mono converted
24 stereo is copying the mono channel to both
25 stereo channels, and then you can up-sample the

1 bit size -- the sample size, and you can
2 convert it to the highest sample size supported
3 by the card.

4 And so what it's saying -- and
5 that's -- it's calling that the modification.
6 So with that modification, what that alleviates
7 is the requirement to -- for these old sound
8 cards -- which are only some of the sound
9 cards, I would point out. That only some of
10 the sound cards require resetting in order to
11 change sampling rate, is what Leaning says, and
12 that's what causes interruption in its audio
13 output.

14 But with this modification that
15 they say what it is, which is up-sampling,
16 upscaling and converting mono to stereo before
17 being put in the buffer, then that -- that
18 interruption can be avoided, because there's
19 now no need to reset even the old sound cards,
20 which are only some of them, to change the
21 sampling rate, that the rate at which the audio
22 circuitry operates.

23 And so that's the modification
24 that's being referred to in line 5 of column
25 15. And by doing that, one alleviates the need

1 to having to reset the sound card or having to
2 clear the buffer.

3 And so -- and that avoids
4 interruptions is what Leaning's teaching.

5 Q This modification you just talked
6 about, that was one you said you relied on in
7 your opening declaration; is that right?

8 A I did refer to I think this exact
9 same paragraph, which talked about -- it's
10 the -- it's doing the same thing as Leaning was
11 teaching, which is data rate switching
12 downwards, but with the modification that when
13 you switch data rates, you up-sample into the
14 buffer so that you don't need to reset the
15 sound card.

16 So -- so I did rely on that, and
17 I relied on that -- I just looked -- in my
18 section 1[E], which involves the continuous
19 playback claim element in claim 1[E] of the
20 '772 patent.

21 I refer back to sections 1[C]
22 and 1[D]. And in one of those sections, I
23 think in paragraph 91, which is, which is the
24 section for 1[D], I do refer to this exact same
25 section, 15, 3 through 8, on page 51 of my

1 opening declaration for the '772 matter, fourth
2 line from the bottom.

3 And that's the one that
4 expressly talks about the modification, and the
5 modification being the modification as
6 described -- as the modification in the
7 previous paragraph.

8 Q Okay.

9 So in paragraph 91, you quote
10 from Leaning, saying, "Leaning also explains
11 'that interruption' of the video stream, quote,
12 'can be avoided and therefore it is preferable
13 to employ a criterion which anticipates
14 underflow and avoids it in the majority of
15 cases,' unquote, by omitting the first
16 determination (i.e., whether the buffer is
17 completely empty) and generating measured rate
18 and Buffer Low Percentage factors as indicators
19 of whether the current streaming rate is
20 sustainable."

21 Did I read that right?

22 A I think you did.

23 Q Okay.

24 And that section there doesn't
25 talk about running the sound card at a

1 different rate, does it?

2 MS. FINGER: Object to form.

3 A Well, the cite that's right after it
4 is the situation where it's teaching about
5 Leaning -- the criteria about automatic data
6 rate switching downwards. That's in 15, 3 to
7 8. But then, "we note that with this
8 modification such interruption can be avoided."

9 And it's talking about the
10 interruption caused by having to reset the
11 sound card in the previous paragraph. That's
12 what the previous paragraph was.

13 So this paragraph that I'm
14 citing to is talking both about the automatic
15 data switching downward, the automatic rate
16 adjustment that is taught throughout Leaning.

17 And then it's talking about,
18 even if you have to switch rates, by using the
19 modification to the -- by up-sampling prior to
20 being put into the buffer and running the sound
21 card at the highest rate, there's no need for
22 such interruption caused by the need to reset
23 the card that is described in the previous
24 paragraph, which the modification avoids such
25 interruption.

1 So that's -- that's what -- I do
2 cite to it in that paragraph, and I do cite to
3 that section.

4 Q So you cite to the Section 15, 3 to
5 8, correct?

6 A Yes, which refers to modification,
7 such modification, which is described in the
8 previous paragraph.

9 Q Okay.

10 So that's -- so if the board
11 were to ask your counsel at the oral hearing
12 where in Dr. Houh's opening declaration does he
13 discuss running the sound card at this higher
14 rate, that's the citation that you would want
15 them to know about; is that right?

16 MS. FINGER: Object to form.
17 Speculation and scope.

18 A Well, I don't know what the board
19 will decide, but I have cited to a section,
20 page 15, lines 3 through 8, that discusses a
21 modification such that interruption can be
22 avoided.

23 And the modification it's
24 referring to is described in the immediately
25 preceding paragraph as a modification that --

1 that -- that -- that then would avoid having to
2 have to require resetting the card to change a
3 sampling rate, because the sampling rate would
4 not need to be changed if all the data that's
5 placed into the buffer was up-sampled to the
6 highest rate of the card, and that would avoid
7 the interruption that's described in the
8 previous paragraph.

9 But -- but it -- but it
10 describes that that modification avoids
11 interruptions in the cited passage.

12 So that -- that is in my opening
13 declaration, that citation.

14 Q Okay.

15 The -- the cited language that I
16 read also mentions omitting the first
17 determination.

18 Do you see that?

19 MS. FINGER: Object to form.
20 Where are you looking, Counsel?

21 A I don't remember what you're
22 referring to by "the cited passage that you
23 read."

24 Q All right.

25 I'm quoting from your original

1 declaration, at column -- sorry, paragraph 91.

2 A Oh, okay. I -- I don't remember
3 which -- where you're referring to right now.

4 Q There's the language "omitting the
5 first determination."

6 Do you see that language? It's
7 towards the bottom half of the page there.

8 A Yes, I see it.

9 Q Okay.

10 So what is the first
11 determination that you're referring to there?

12 A There's -- I'm referring to another
13 factor that is --

14 (The deponent read the
15 document.)

16 A -- of whether the buffer is
17 completely empty.

18 Q So is that shown in the flowchart on
19 page 54 of your opening declaration?

20 MS. FINGER: Object to form.

21 A Well, I think when I'm -- there's --
22 there's a determination in J4, the second row
23 of J4, "If BufferFullness equals 0," and I
24 think that's -- that's the determination of
25 whether the buffer is completely empty, because

1 that's what the buffer fullness equals there.

2 And so that's a determination
3 that the buffer is completely empty. And by
4 omitting that and generating measured rate and
5 buffer low percentage factors as indicators of
6 whether the current stream rate is sustainable
7 is -- is an additional explanation by Leaning
8 about how that interruption -- which would be
9 understood as a way that the interruption could
10 have been avoided. And it's preferable to
11 employ a criterion which anticipates underflow
12 and avoids it.

13 So, you know, if you're
14 anticipating underflow, you wouldn't wait to
15 test a condition that the buffer has completely
16 emptied, because that's an underflow condition.

17 So you can avoid a situation
18 that anticipates underflow, which is what
19 Leaning expressly says. Then -- then you would
20 omit that first determination as to whether the
21 buffer's completely empty and -- and -- and
22 that's -- that's what Leaning's teaching.

23 Q Okay.

24 So that would be -- so to omit
25 that -- to omit that step you would need to

1 change this flow to delete that first
2 criterion, then, correct, when you're
3 performing J4? You would not do the
4 BufferFullness equals 0 criterion? Instead,
5 you would just do the rest, correct?

6 MS. FINGER: Object to form.

7 Q That's what he means by "omit," I
8 guess is what I'm getting at.

9 (The deponent read the
10 document.)

11 MS. FINGER: Sorry, is there a
12 pending question?

13 Q Is that correct?

14 A So the quotation of -- that I've
15 quoted here, "can be avoided and therefore it
16 is preferable to employ a criterion which
17 anticipates underflow and avoids it in the
18 majority of cases," so that, coupled with the
19 flowchart, that's teaching a person of ordinary
20 skill in the art that you can have a different
21 condition that anticipates underflow and avoids
22 it.

23 And when the buffer fullness
24 equals 0, that's an underflow condition.
25 You've drained the buffer.

1 So it's actually teaching, you
2 know, that you can have a criteria that would
3 avoid that situation.

4 So you would omit that because
5 that's a situation where it's underflowing and
6 have a situation where you would anticipate the
7 underflow, that is, be able to avoid it before
8 it happens as opposed to testing that it has
9 already happened.

10 And so my point here is that the
11 overall teachings of Leaning disclosed that you
12 could -- you would omit that first test in --
13 in, you know, what's further described in
14 Leaning to avoid the underflow situation that
15 is the buffer underflow situation before it
16 actually happens. And that's what is expressly
17 taught in the cited passage in 15 that I cite
18 in paragraph 91.

19 And then coupled with that
20 modification where you don't need to reset the
21 sound card because all the data going into the
22 buffer is at the highest rate of the sound card
23 and at the highest bit sample rate, and that's
24 stereo, then that also is another way that
25 interruptions are avoided.

1 And that's actually what it says
2 in the preceding paragraph when it describes
3 the modification referred to in the cited
4 passage on page 15, lines 3 through 8.

5 Q Okay.

6 A If I could just add to that?

7 Q Yeah.

8 A I mean, the flowchart from pages 9 to
9 11 is an example flowchart. It doesn't capture
10 every situation taught in Leaning.

11 So, you know, people can read
12 the situations in Leaning where you're going to
13 now avoid underflow and realize that the way to
14 avoid underflow is not to test when the buffer
15 is totally empty, which is the underflow
16 situation.

17 So -- so that flowchart --
18 that's why I say a person of ordinary skill
19 would know that by omitting that first
20 declaration -- that determination, rather, of
21 testing whether the buffer is 0, and then --
22 and having a generated -- generating measured
23 rate and buffer low percentage factors of these
24 other indicators, you can then have a
25 situation, which is expressly taught in

1 Leaning, to avoid the underflow situation
2 before it occurs.

3 Q Let's move to paragraph 61 of your
4 declaration.

5 A The supplemental --

6 Q Sorry, correct, back to the
7 supplemental declaration.

8 A Okay.

9 Q That's the beginning of subsection C,
10 which is entitled "Leaning Discloses
11 Uninterrupted Playback"; is that right?

12 A Yes.

13 Q Okay.

14 The first sentence there, you
15 say you "disagree with Dr. Jeffay that
16 'continuous playback' is equivalent to
17 uninterrupted or undisrupted playback."

18 Do you see that?

19 A Yes.

20 Q And there, you -- you say that that's
21 described above.

22 So I assume that's -- you're
23 referring back to the analysis earlier about
24 the reasons why -- we spoke about earlier that
25 the reasons why this wouldn't be how a person

1 of ordinary skill in the art would understand
2 the term is because of the evidence about the
3 MOVE player functionality; is that correct?

4 MS. FINGER: Object to form.
5 Counsel's testifying.

6 A Well, I think we did look at some
7 language earlier about that. I'm not sure if
8 that was actually above this reference in this
9 paragraph or below.

10 But I certainly do talk about
11 some of the claim language with respect to
12 continuous playback in the previous section
13 about how my original declarations do address
14 the continuous playback and continuous
15 presentation limitations, and that's Section B
16 that precedes this Section C that we're looking
17 at, that is on the previous few pages.

18 But I also do point out that the
19 patent owner's own arguments that the MOVE
20 product accomplishes continuous playback,
21 coupled with what I'm already discussing in the
22 previous paragraph, all show that continuous
23 playback does not require completely
24 uninterrupted playback.

25 Q So is it true that in your view,

1 continuous playback here can include
2 interrupted playback?

3 MS. FINGER: Object to form.

4 A No. My point -- my point here really
5 is that, you know, patent owner has made their
6 own arguments that the MOVE product practices
7 the claims. And the claims have a requirement
8 in -- in -- of -- in these patents of
9 continuous playback or continuous presentation,
10 and because the patent owner argues that the
11 MOVE product does accomplish this continuous
12 playback or continuous presentation, that is
13 another reason that shows that --

14 And we also know that the MOVE
15 player admittedly, by -- you know, I've cited
16 to this; we looked at this earlier -- by
17 MOVE's -- I think people who have submitted
18 declarations or at least were deposed in this
19 case, I believe former MOVE employees and even
20 Dr. Jeffay, admit that the MOVE player have --
21 could freeze or have delays.

22 You know, the language is what I
23 say in my report. But -- and because --
24 because the patent owner says that the MOVE
25 player despite freezes is practicing the claims

1 which include the continuous
2 playback/continuous presentation limitations,
3 that -- that that shows that continuous
4 playback does not require completely
5 uninterrupted playback.

6 Q Okay. Yeah, I believe you did cite
7 that, and we talked about it. We also talked
8 about the file history as supporting your
9 opinion, correct?

10 MS. FINGER: Object to form.

11 Q Of this --

12 A Well, the main thing I pointed out in
13 the file history with respect to playback is
14 continuous or -- I think that's the language,
15 "meaning playback is continuous" that we looked
16 at in page 400-something in the file history,
17 was the -- the patent owner laid out an example
18 of what they considered within the scope of
19 playback is continuous or continuous playback,
20 and that included something about --

21 I mean, we can go look at that
22 language. I'll refer you to the language,
23 but -- but those are the things that actually
24 Leaning actually does disclose, and that's how
25 Leaning actually meets that part of the claim

1 element, because it does exactly what the
2 patentee or patent owner in the prosecution
3 history said was within the scope of the
4 meaning of "continuous playback" or "playback
5 is continuous."

6 Q So other than those two general
7 categories of evidence that you just mentioned,
8 is there any other reason you disagree with
9 Dr. Jeffay that continuous playback is
10 equivalent to uninterrupted --

11 MS. FINGER: Objection.

12 Q -- or undisrupted playback?

13 MS. FINGER: Object to form.

14 A I guess my point is that Dr. Jeffay
15 is not saying that continuous playback requires
16 completely uninterrupted playback, because he
17 points -- he says that the MOVE player freezes
18 as well.

19 Yet somehow, I think he's also
20 claiming that the MOVE player practices the
21 claims. And so if he were saying continuous
22 playback requires completely uninterrupted
23 playback, I think those are conflicting
24 statements.

25 Q Why?

1 A Because if he says the MOVE player
2 practices the claims and admits that the MOVE
3 player had -- could -- you know, would freeze,
4 and he says continuous playback requires
5 completely uninterrupted playback, that is,
6 without freezing, then those two statements are
7 at odds with each other.

8 So the only -- the only way they
9 would not be at odds with each other is if
10 continuous playback does not require completely
11 uninterrupted playback.

12 And that's -- that's what I say
13 patent owner's own arguments show, is that
14 continuous playback does not require completely
15 uninterrupted playback.

16 Q Okay.

17 But there's another way those
18 two statements wouldn't be at odds with each
19 other, and that's if the MOVE player usually
20 played back the video uninterrupted, correct?

21 Then in that case, it would
22 practice the claim, wouldn't it?

23 MS. FINGER: Object to form.
24 Speculation. And also scope.

25 A Could you repeat what you said again?

1 Repeat the question, please.

2 Q Okay. Let me rephrase the question.

3 So if you assume that the MOVE
4 player usually played back an entire video
5 without interruptions, that would be within the
6 scope of the claims, would it not?

7 MS. FINGER: Object to form.

8 Assumes facts not in evidence.

9 A Well, I don't see the word "usually"
10 anywhere. I don't see "usually" used in the
11 claim language.

12 I mean, we can go look at the
13 claim language. I don't think the word
14 "usually" is there, so I don't know where
15 you're getting the word "usually" from.

16 But the point is, if Dr. Jeffay
17 says the patent owner is claiming that the MOVE
18 player practices the claims, which require
19 continuous playback, yet patent owner's own
20 expert and their former employees, I think,
21 admit that the MOVE player would freeze,
22 sometimes jump backwards -- I remember seeing
23 that somewhere, which is -- which is odd, that
24 seems to indicate some sort of design defect in
25 the software -- then that's certainly not --

1 That's indicating that if it
2 can -- then is practicing continuous playback,
3 then the continuous playback does not require
4 completely uninterrupted playback, and I think
5 that's what patent owner's own arguments and --
6 show.

7 Q Okay.

8 Let's look at claim 1, then. Do
9 you have it in front of you? I think the court
10 reporter might have your copy.

11 A Thank you.

12 MS. FINGER: What exhibit is
13 this? What patent?

14 MR. WILLIAMS: This is the '772
15 patent.

16 Q We can look at just claim 1 for now,
17 I think, Dr. Houh.

18 Do you see claim 1?

19 A Yes.

20 Q So claim 1 is a method, right?

21 MS. FINGER: Object to form.

22 A Yes.

23 Q Okay.

24 And then the element towards the
25 end there that begins with "making" is where

1 "achieve continuous playback" is recited,
2 correct?

3 A I do see that, line 57, yes. Looks
4 like column 13, line 57.

5 Q Yeah.

6 So in your view, to practice
7 this claim, would this -- would the MOVE system
8 always have to achieve continuous playback?

9 MS. FINGER: Object to form.
10 Calls for a legal conclusion.

11 A My point in this paragraph isn't
12 about that question. My point in this
13 paragraph is whatever -- whatever, you know,
14 the patent owner's saying, they're saying among
15 that, the MOVE player is practicing these
16 claims.

17 So if the MOVE player practices
18 the claims, they're saying that the MOVE player
19 is -- is practicing this claim, which also
20 includes the language "to achieve continuous
21 playback of the video."

22 And so that's what the -- that's
23 what the -- that's what the patent owner
24 themselves are saying, and the patent owner's
25 expert, I believe.

1 And so if that's the case, and
2 the MOVE player further experiences frozen
3 video, and as admitted by -- and I've cited to
4 this. Somewhere we looked at that paragraph
5 earlier, had this discussion earlier.

6 That then if -- they're saying
7 that then the -- the playback -- continuous
8 playback is practiced by the MOVE player which
9 can experience frozen -- frozen video, then
10 that shows that continuous playback does not
11 require completely uninterrupted playback.

12 Q Okay. Let's -- let's separate the
13 issues out slightly.

14 Assume for a moment that you
15 have -- there's no file history at all, and you
16 don't have this evidence that you're just
17 alluding to there about the MOVE player, as
18 though that were not the case.

19 Would you have the same opinion,
20 that the term "continuous playback" is not
21 equivalent to uninterrupted playback?

22 MS. FINGER: Object to form.
23 Speculation. Assumes facts not in evidence.

24 A I mean, what you're describing is
25 some alternate universe which we're not in.

1 This is not -- we have the statements by the
2 MOVE employees. We have their statements in
3 their deposition. We have what Dr. Jeffay has
4 said. We have the arguments in the prosecution
5 history.

6 So what I consider for my
7 declaration is actually the world we're in,
8 not -- not alternative hypothetical universes.

9 Q Okay.

10 Have you ever held the opinion
11 before the Patent Trial Board and Appeals that
12 the word "continuous" is equivalent to
13 "uninterrupted"?

14 MS. FINGER: Object to form.
15 Scope.

16 A Well, I don't remember everything I
17 have said in front of the Patent Office, but
18 with respect to this case, this case has its
19 own patents, its own specifications, its own
20 prosecution histories.

21 I don't recall saying that
22 within the context of this case. And if -- if
23 there were -- there could be different facts in
24 different cases and different panels.

25 Q Okay. Sure. Let's talk about that,

1 then.

2 I'm going to have the court
3 reporter mark this as Exhibit 2200.

4 MS. FINGER: Counsel, is this a
5 new exhibit?

6 MR. WILLIAMS: Yes, it's being
7 marked as 2200.

8 MS. FINGER: For purposes of the
9 record, I object to the introduction of this
10 exhibit based on foundation, authentication and
11 FRE 106, 401 to 403, 602, 701 to 703, and 801
12 to 802.

13 MS. OSMAN: Counsel, do you have
14 another copy of this exhibit for me?

15 (Exhibit 2200 marked for
16 identification.)

17 BY MR. WILLIAMS:

18 Q Okay.

19 So you've been handed now what's
20 been marked as Exhibit 2200, correct?

21 A Well, I do see a sticker on this
22 document that says "Exhibit 2200."

23 Q Perfect.

24 And it's entitled "Declaration
25 of Dr. Henry H. Houh in Support of Petition for

1 Inter Partes Review of US Patent
2 No. 7,166,062," correct?

3 A Yes.

4 Q Okay.

5 And if you just turn to, I
6 guess, the last page, which is 357, that's your
7 signature, right?

8 A That appears to be, yes.

9 Q Okay.

10 And it was dated in October of
11 2021?

12 A Yes.

13 Q Do you recall submitting this
14 declaration or no?

15 A I submit a lot of declarations. I
16 generally recall a case that I worked on with
17 Peloton, I probably don't remember the details
18 or specifics of this case.

19 Q Okay. That's fine.

20 If you can turn to paragraph 188
21 of that declaration.

22 A Okay.

23 Q The last sentence of that paragraph,
24 which begins on page 83 and carries over,
25 reads, "A POSITA would understand that data

1 that is smooth and continuous is substantially
2 uninterrupted because any interruption would
3 cause disruption or jerkiness."

4 Did I read that correctly?

5 MS. FINGER: Object to form.

6 What paragraph are you looking
7 at?

8 MR. WILLIAMS: 188.

9 MS. FINGER: 188.

10 A I think you -- you read it correctly.
11 And this is in regards to another patent that I
12 think is Studor, which is talking about terrain
13 characteristic data simultaneously collected
14 with the video data using a time interval which
15 ensures that changes in terrain
16 characteristics -- characteristic seem smooth
17 and continuous to the user, and that -- I think
18 this is about -- this is not describing --

19 I mean, again, this is a
20 different case, a different set of facts,
21 different specifications in the patent,
22 different context, different file histories
23 than the current case we're looking at with
24 respect to the '772.

25 Q Okay.

1 So depending on the evidence in
2 the record, sometimes POSITAs understand that
3 data that's smooth and continuous is
4 substantially interrupted, and in other cases
5 they wouldn't understand that; is that right?

6 MS. FINGER: Object to form.

7 A I think you got things kind of
8 twisted here.

9 So -- so the -- it's the patent
10 owner that is making the claim here in the '772
11 case. It's the patent owner that's saying
12 meeting continuous playback or presentation is
13 met even when a player experiences a -- frozen
14 episodes. That's what the -- the patent owner
15 here in the '772 case is saying.

16 I -- I'm not -- I didn't say
17 what's required of continuous presentation with
18 respect to that issue, because it's the patent
19 owner themselves that are saying that the MOVE
20 player, which experiences frozen episodes,
21 experiences -- as I recall, one of the
22 deponents mentioned even jumping unexpectedly
23 back in the video.

24 And those kinds of interruptions
25 and freezing episodes still allow the MOVE

1 player to meet the claim limitations of
2 continuous playback or continuous presentation.

3 That's what the patent owner
4 themselves is saying. So that -- that's what
5 I'm saying the patent -- that's -- that's the
6 interpretation -- that's my understanding of
7 what the patent owner themselves are saying.

8 And by -- by the patent owner
9 and experts and, you know, all saying that,
10 that shows that in this case, with respect to
11 the '772, that continuous playback does not
12 require completely and uninterrupted playback.

13 Q Okay.

14 What was the meaning you applied
15 to "continuous playback" when you -- when you
16 wrote your original declaration?

17 A As I stated with respect to, I think,
18 my original declaration, if you mean the '772
19 opening declaration?

20 Q Yes, that's the one, yes.

21 A That -- I believe I stated this, but,
22 you know, my understanding is that, you know,
23 words in a claim are to be interpreted by a
24 person of ordinary skill in the art at the time
25 of the invention in the context of the

1 specification and prosecution history.

2 And so that would be what I
3 applied to any words that were not expressly
4 construed, and that's generally how I
5 understand is the proper way to interpret
6 claims in a patent.

7 Q Okay.

8 So at the time you wrote that
9 original declaration for the '772 patent, did
10 you have in your mind an understanding of what
11 "continuous playback" meant?

12 MS. FINGER: Object to form.

13 A Well, in my original opening
14 declaration in the section of my analysis which
15 discusses -- which has the element discussing
16 continuous playback, which is 1[E], and that
17 begins in my '772 opening declaration at
18 paragraph 92, or is just paragraph 92, I
19 suppose, but also refers to Sections 1[C] and
20 1[D], that's where my analysis shows that
21 the -- Leaning does disclose continuous
22 playback.

23 And I do refer to my discussion
24 for claim elements 1[C] and 1[D] within
25 paragraph 92 as well. So -- so together, I --

1 that's part of -- that's my analysis where I
2 show that Leaning is teaching element 1[E],
3 which includes the "continuous playback"
4 language.

5 Q Okay.

6 So if I wanted to know what
7 meaning you attributed to the words "continuous
8 playback" when you wrote the original
9 declaration, I would find it in paragraph 92?
10 Is that what you're telling me?

11 MS. FINGER: Object to form.

12 A I don't in any of my sections say
13 this word means that, this -- these words mean
14 that. So I -- what I do show in my analysis is
15 how Leaning meets the claim element and
16 discloses it teaches claim element 1[E]. That
17 is what I'm doing in my analysis.

18 And in my analysis, I go
19 through -- but I do refer back to Sections 1[C]
20 and 1[D] where there's further discussion about
21 similar issues that are raised in element 1[E].

22 So taken together, those --
23 those are my reasons why Leaning teaches
24 element 1[E].

25 Q Can you say whether or not when you

1 wrote the original '772 declaration you had an
2 opinion as to whether continuous playback
3 included uninterrupted playback?

4 MS. FINGER: Object to form.
5 Asked and answered.

6 Q I'm sorry. Let me withdraw the
7 question anyway because I asked it wrong.

8 Can you tell me whether when you
9 wrote the original '772 declaration you had an
10 opinion as to whether "continuous playback"
11 included "interrupted playback"?

12 MS. FINGER: Same objections.

13 A Well, when I wrote this original
14 declaration, these are my original opinions
15 laid out in my opening declaration, so this is
16 what I wrote.

17 It was only later that MOVE made
18 the argument -- sorry, that patent owner made
19 the arguments about the MOVE player and how it
20 practiced all these claims. And then -- and
21 then Dr. Jeffay criticized Leaning for having
22 interruptions, or I think always having
23 interruptions, which is clearly not true.

24 And I disagree with Dr. Jeffay's
25 opinions about how he reads Leaning for many

1 reasons that I lay out in my supplemental
2 declaration, which is responsive to
3 Dr. Jeffay's opinions about the way Leaning
4 works.

5 And so I think -- I obviously
6 did not have Dr. Jeffay's declaration, which
7 was submitted at a later time, when I wrote
8 this opening declaration.

9 So I -- but then -- then I
10 understand I was given an opportunity to reply
11 to Dr. Jeffay's arguments, which I have laid
12 out in my supplemental declaration.

13 MR. WILLIAMS: Should we just
14 take a short break, five minutes?

15 THE DEPONENT: Sure.

16 (Recess.)

17 BY MR. WILLIAMS:

18 Q Can you return to your supplemental
19 declaration now, and let's go to paragraph 80.

20 A Okay.

21 Q You found paragraph 80?

22 A Yes.

23 Q Okay.

24 There, you say -- sorry, the
25 first sentence says, "A person of ordinary

1 skill in the art would understand from Leaning
2 that clearing the buffer refers to actually
3 playing out the sub-files in the buffer, not
4 discarding them."

5 Is that correct? Have I read
6 that correctly?

7 A Yes.

8 Q Okay.

9 And does that mean that any time
10 I see "clear buffer" in Leaning, that's what a
11 person of ordinary skill in the art would have
12 understood Leaning to mean?

13 MS. FINGER: Object to form.

14 (The deponent read the
15 document.)

16 A So I -- so this is really in response
17 to Dr. Jeffay's arguments about the inclusion
18 of a clear buffer step in the flowchart. And I
19 talk about this in paragraph 76, a couple
20 paragraphs before.

21 And so this -- this discussion
22 is with respect to the clear buffer step that
23 Dr. Jeffay has referred to in his report. It's
24 kind of responsive to his arguments, that this
25 stepup step for clear buffer, as he's

1 supplemented the -- my modified -- or, sorry,
2 annotated excerpt of -- of the flowchart on
3 page 10 of Leaning in my report, somewhere, he
4 supplemented it and highlighted the clear
5 buffer step.

6 And if you look at that just in
7 the overall teaching of Leaning, that -- that
8 particular clear buffer step which -- which
9 is -- which I'm responding to for Dr. Jeffay
10 that he points to, that's -- that's the one
11 that a person of ordinary skill in the art
12 would understand that that refers to just
13 playing out the sub-files in the buffer, not
14 discarding them.

15 Because Leaning is highlighting
16 continuing the -- from the same point in the
17 recording that the last sub-file at the old
18 rate ended, and so -- and that's what I point
19 to in paragraph 80 that we're looking at.

20 But if one were to clear it out,
21 then it would not meet the teaching of Leaning
22 about continuing from the same point in the
23 recording that the last sub-file at the old
24 rate ended, and that it's not necessary to,
25 because you -- you simply are playing out at

1 the old rate, right, prior to resetting the
2 card and being able to repopulate the buffer
3 with samples at a new rate.

4 But, again, elsewhere in my
5 declaration, I also point out that -- that you
6 wouldn't need to in addition because Leaning is
7 also teaching a situation where all the -- all
8 the -- all the data that's put in the buffer is
9 up-sampled to the highest rate.

10 And so there's never any need to
11 have to reset the sound card as a result and
12 then have to put new data at a different rate
13 back into the buffer.

14 So now I stand by what I have
15 written here in paragraph 80, but it does refer
16 to the instance of clear buffer that Dr. Jeffay
17 has pointed out in his report, which I think is
18 the first step under the stepup box row on
19 page 10.

20 Q Do you have Leaning in front of you?

21 A Yes.

22 Q Turn to page 11.

23 A Okay.

24 Q And then line 19 there's a sentence
25 that says -- begins "We prefer."

1 Do you see that sentence?

2 A Yes.

3 Q Do you agree with me that at least in
4 the context of that sentence, when Leaning says
5 clear the buffer, he means discard its
6 contents?

7 MS. FINGER: Object to form.

8 A Well, I understand Dr. -- I think
9 Dr. Jeffay is also pointing to this, but this
10 is in the context of a jump, and I do address
11 Dr. Jeffay's arguments about that.

12 This is -- this is a user --
13 it's not about changing rates here. This is
14 about a user -- if you look at the top of the
15 section in which that sentence occurs, line 12,
16 "Jump: implemented by the user indicating which
17 part of the recording he wishes to jump to."

18 So this is just saying, you
19 know, I'm playing at the beginning, I want to
20 jump to the middle or the end of the -- of the
21 recording. And that -- it's very clear, this
22 sentence, "We prefer, in the case of the jump,
23 to suspend decoding and clear the buffer so
24 that the new request is sent immediately, but
25 this is not actually essential."

1 So it's even saying here that
2 it's not essential. But this is a very
3 different context. This is not in the context
4 of where different rates are being switched to.
5 This is in the context of a jump.

6 And I think -- I don't know
7 where in my declaration, supplemental, I
8 discuss that, but I -- I think I remember
9 talking about that somewhere.

10 Q Yeah.

11 I think it's in paragraph 81,
12 but -- is that what you're looking for?

13 A Yeah, so my point here is that --
14 (Reporter clarification.)

15 A My point here is that in
16 paragraph 81, it says, "That portion goes on to
17 clarify 'this is not actually essential' and
18 this is in the context of a 'jump' (that is,
19 when a user moves a cursor to a desired point
20 on a displayed bar representing the total
21 duration of the recording), not a change in
22 bitrate."

23 So this is not with respect to
24 stepping up or stepping down. This is with
25 respect to a jump. So this doesn't really

1 apply to the situation of when there's a change
2 in bitrate.

3 Q Okay.

4 Now, my question was, that
5 sentence, though, that we were reading in
6 Leaning on page 11, that is discussing the case
7 of a jump.

8 And my question to you was,
9 would a POSITA understand that in that context,
10 "clear the buffer" means discard its contents?

11 MS. FINGER: Object to form.
12 Asked and answered.

13 A That's not what I laid out because
14 this is not a situation with respect to the
15 change in bitrate, which is what the patent's
16 about mostly, you know, the claims are directed
17 to the changes in bitrate.

18 Q Okay.

19 MR. WILLIAMS: Move to strike as
20 nonresponsive.

21 BY MR. WILLIAMS:

22 Q Are you just unwilling to tell me how
23 a POSITA would have understood that sentence?

24 MS. FINGER: Object to form.
25 Counsel is being argumentative.

1 A I don't -- I don't think I've
2 addressed that directly in my declaration.
3 These are my written opinions, so...

4 Q Okay.

5 So when you talked in
6 paragraph 80 that a person of ordinary skill in
7 the art would understand from Leaning that
8 "clearing a buffer" refers to actually playing
9 out the sub-files in the buffer, not discarding
10 them, you were not talking about this sentence,
11 correct?

12 MS. FINGER: Object to form.

13 A As I said earlier, I was responding
14 to Dr. Jeffay's argument about -- which he
15 highlighted, the clear buffer under the step --
16 is it -- under the Stepup label, and in that
17 case, I lay out the reasons why a person of
18 ordinary skill would have understood from
19 Leaning that there -- that -- that "clearing
20 the buffer" refers to actually playing out the
21 sub-files in the buffer, therefore clearing it
22 out and clearing the buffer, not discarding
23 them.

24 And that's in the context where
25 those are samples of an old rate. The card

1 needs to be reset to have the circuitry changed
2 to a different rate, and then -- only then
3 would the samples, placed then at a new rate,
4 you know, require that the card had been reset
5 and changed. And that only applies to some
6 cards, at any rate, is what Leaning teaches.

7 And furthermore, Leaning teaches
8 a way that that step could be avoided
9 altogether or -- or that requiring of reset
10 would be avoided by up-sampling everything
11 before placing it in the buffer, which would
12 alleviate or eliminate the need at all to do
13 any of -- of the steps related to having to
14 reset the audio card.

15 Q Okay.

16 Let's go to paragraph 85.

17 A Okay.

18 Q Do you have -- the first sentence you
19 say, "Dr. Jeffay also opines that Leaning is
20 limited to audio."

21 Do you see that?

22 A Yes.

23 Q Actually, sorry, before we move on to
24 that. Do you have an opinion about whether
25 Leaning -- when he uses -- when he talks about

1 "clearing the buffer," he intends that to have
2 multiple different meanings?

3 MS. FINGER: Object to form.

4 A Are you referring to something I
5 actually wrote in my supplemental declaration?

6 Q Yes. Yes, I am.

7 A Oh, what are you referring to?

8 Q Paragraph 80, you say, "Clearing the
9 buffer from Leaning refers to actually playing
10 out."

11 Now I'm asking you does
12 "clearing the buffer" in Leaning have multiple
13 meanings or is it always the same meaning?

14 A I don't use any of those words in
15 that sentence.

16 Q You use the word "clearing the
17 buffer" on the second line of paragraph 80,
18 correct?

19 A Yes.

20 Q Okay.

21 So the sentence says, "A person
22 of skill in the art would understand from
23 Leaning that clearing the buffer refers to
24 actually playing out the sub-files."

25 And my question to you is, would

1 a POSITA also understand from Leaning that
2 "clearing the buffer" could mean something
3 different than that?

4 A I'm not saying in this -- this
5 paragraph is with -- responsive to Dr. Jeffay's
6 arguments that clearing the buffer, that he
7 highlighted in that step in the flowchart,
8 right under Stepup, the Stepup label, and
9 that's the one that Dr. Jeffay concludes that
10 Leaning requires clearing the buffer every time
11 a rate shift occurs, and therefore interrupting
12 playback every time a rate shift occurs.

13 And so that's what I disagree
14 with, and I lay out the reasons in the
15 following paragraph.

16 So in that particular case --
17 first of all, that -- a person of ordinary
18 skill would recognize that -- that in the case
19 where the -- the -- the clearing the buffer is
20 in the context of -- of the rate change and
21 the -- and this step is with respect to the
22 rate change and the discussion in the
23 specification of Leaning about how some sound
24 cards require the sound card to be reset when
25 changing audio sampling rates.

1 And so it wouldn't be necessary
2 to -- to do steps that require resetting the
3 board, including letting -- you know, playing
4 out the samples at the old rate out to switch
5 to a new rate so that the new samples in the
6 buffer are to be played back at a different
7 rate if everything was up-sampled.

8 But furthermore, even in the
9 situation where -- where the sound card is --
10 does require resetting and -- and it's talking
11 about clearing the buffer in the step just --
12 just under the Stepup label, or the first step
13 of the Stepup label, I suppose, which talks
14 about clearing the buffer, Leaning, because
15 it's teaching, you know, continuing from the
16 same point in the recording that the last
17 sub-file at the old rate ended, and that's what
18 I say in 80, that -- that that refers to
19 playing out to get to the last point in the
20 recording where the -- the old rate ended, so
21 that would be played from that point or right
22 after that point at the new rate.

23 And so in that -- you know,
24 "sub-files in the buffer have already been
25 received and decoded. It would be inefficient

1 and undesirable to redo that process, which
2 would add roundtrip time for the data
3 transmission and occupy bandwidth."

4 So the overall teachings of
5 Leaning, and the context of the required rate
6 switching for the sound cards, that -- that's
7 what -- you know, with respect to the clear
8 buffer step that Dr. Jeffay has -- he believes
9 causes, every time a rate shift occurs,
10 interrupting playback, I -- that's why I
11 believe he's wrong.

12 Q Okay.

13 In Leaning's flowchart on
14 page 10, do you have that flowchart?

15 A Yes.

16 Q Okay.

17 So just under the -- under the
18 row that talks about the input of user
19 commands, there's a line that says, "If
20 UserCommand equals Jump, then: Clear buffer."

21 Do you see that?

22 A Yes.

23 Q Okay.

24 And then below that, there's a
25 Stepup label, the first -- and the first line

1 under the Stepup label is "Clear Buffer."

2 Do you see that?

3 MS. FINGER: Objection.

4 A Yes.

5 Q And the bottom of the page, there's a
6 Stepdown label and the first line under that is
7 "Clear Buffer."

8 Do you see that?

9 A Yes.

10 Q Okay.

11 In your view, would a POSITA
12 have understood that "clear buffer" means the
13 same thing in each of those instances?

14 (The deponent read the
15 document.)

16 A So -- so, you know, the figure on
17 page 40 of Dr. Jeffay's declaration, which is
18 the page number in the middle, not the -- it's
19 page 44 of the exhibit, lower right-hand
20 corner.

21 I mean, he has highlighted the
22 "Clear Buffer" under "Stepup," but I do
23 understand that, you know, Dr. Jeffay is
24 referring to the clear buffer for stepup and
25 stepdown, which would also include, although

1 it's not in the diagram that I excerpted that
2 Dr. Jeffay further annotated, that the clear
3 buffer under stepdown is similar to the clear
4 buffer under stepup, which is as a result --

5 You know, stepping down,
6 stepping up, stepping down for the old sound
7 cards where you have the situation where you're
8 going to have to reset the sound card, it's the
9 same situation, that you would still play out
10 the old data in the buffer at the old rate
11 before switching to the new rate, which in
12 between the switch, you'd have to reset the
13 card.

14 And that -- you know, Leaning
15 itself is teaching that it continues from the
16 same point in the recording that the last
17 sub-file at the old rate ended.

18 And that does indicate in the
19 overall teaching that that -- the clear buffer
20 under stepdown is similar to the clear buffer
21 under stepup.

22 First of all, it may not be
23 required at all if you never have to reset the
24 card, because you would always be putting in
25 the buffer the up-sampled data.

1 But, you know, in terms of
2 what's under Jump, I'd just point out that that
3 is not capitalizing the second "Clear buffer,"
4 or the "buffer" of the "Clear buffer."

5 But it's -- Leaning expressly
6 teaches that that's not actually essential in
7 the context of a jump.

8 And that jump is not in the
9 context of a bitrate change.

10 Q Okay.

11 Back down to your supplemental
12 declaration at paragraph 85, you say,
13 "Dr. Jeffay also opines that Leaning is limited
14 to audio."

15 Do you see that sentence?

16 A Yes.

17 Q And you're citing there to paragraph
18 66 and then 84 to 88 of Dr. Jeffay's
19 declaration; is that right?

20 A I mean, I do see what I said there.

21 Q Okay.

22 Now, Dr. -- where does
23 Dr. Jeffay opine that Leaning is limited to
24 audio?

25 (The deponent read the

1 document.)

2 A I think the point here is that if you
3 look at the citations in what Dr. Jeffay is
4 saying, he's arguing that the Leaning citations
5 that I rely on are audio.

6 So I think that is what I'm
7 saying, is that that's what Jeffay is opining,
8 is that the Leaning citations I'm relying on
9 are limited to audio.

10 And it's really just not the
11 case, because there are prefaces and -- in
12 discussion of audio that clearly identify that
13 its teachings applied to conveying video
14 signals as well. So -- as in the cited
15 example, "As will be discussed in more detail
16 below, the system may be used to convey video
17 signals instead of, or in addition to, audio
18 signals."

19 And Dr. Jeffay's point is that
20 my citations are all limited for the most part
21 to audio, which is what -- what he does say in
22 paragraphs 66, 84 through 88.

23 Q Okay.

24 He never said that Leaning was
25 limited to audio, correct?

1 MS. FINGER: Object to form,
2 scope.

3 A I think he's -- he's replying to my
4 arguments about my citations in Leaning which
5 he is saying are exclusive or almost
6 exclusively only discussing audio.

7 But the point that I have is
8 that even though Leaning may be talking about
9 some audio embodiments in part, it clearly says
10 up front and with respect to lots of different
11 places that a lot of the -- all the teachings
12 apply -- the same -- the same principle -- if
13 you look at page -- the block quote in the
14 middle of page 50, "The same principle may be
15 applied to the delivery of video recordings."

16 If you look at the block quote
17 at the bottom of page 49, right up front on
18 page 2 of Leaning, at the top, it says, "The
19 system may be used to convey video signals
20 instead of, or in addition to, audio signals."

21 So I think that's what I'm
22 taking issue with, with the characterization
23 that Dr. Jeffay has that all my Leaning
24 references cite to audio.

25 Q Okay.

1 In your next paragraph from --
2 after the one you were just reading from,
3 paragraph 87, do you see that paragraph?

4 A Yes.

5 Q You say, "At a minimum, an individual
6 having ordinary skill in the art would readily
7 understand what changes would need to be made
8 to any audio examples in Leaning to apply the
9 same concepts to video, including the changes
10 Leaning supplies."

11 Do you see that?

12 A I do see that.

13 Q Okay.

14 So other than the changes
15 Leaning supplies, are any other changes needed
16 to make the audio examples apply to video?

17 MS. FINGER: Object to form.

18 A Well, I think actually Leaning
19 expressly teaches some of the changes, some of
20 the things with respect to -- to video, which I
21 think Dr. Jeffay has ignored.

22 For example, on page 16, if you
23 look at line -- starting at line 17, "The
24 delivery of video recordings does, however,
25 have further implications for file partitioning

1 if switching or jumps are to be permitted."
2 That is switching referring to rate switching.

3 I think -- I think Dr. Jeffay
4 has kind of -- he's said that I've ignored or
5 that -- I think he said something -- actually,
6 I'd like to point that out.

7 Yeah, he says in paragraph 84,
8 "Dr. Houh fails to consider these further
9 implications and therefore fails to show that
10 the principles he relies on in Leaning with
11 respect to audio could also achieve continuous
12 playback when delivering video."

13 And he might be referring to
14 this exact sentence, which is line 17, page 16,
15 "The delivery of video recordings does however
16 have further implications for file partitioning
17 if switching or jumps are to be permitted. In
18 the case of recordings where each frame of a
19 picture is coded independently," and we're
20 obviously talking about video here, "it is
21 sufficient that a sub-file contains a whole
22 number of frames of a picture. If compression
23 involving inter-frame techniques is in use,
24 however, the situation is more complex. Some
25 such systems (for example the MPEG standards)

1 generate a mixture of independently coded
2 frames ('intra-frames') and predictively coded
3 frames; in this case each sub-file should
4 preferably begin with an intra-frame."

5 These are some of the
6 implications which -- which I have considered
7 and they're expressly laid out in the teachings
8 of Leaning about, okay, if you have
9 independently -- all independently coded
10 frames, which -- which Dr. Jeffay seems to have
11 ignored that situation, it is sufficient that a
12 sub-file contain a whole number of frames of a
13 picture.

14 And if there's this inter-frame
15 coding compression technique used, then in this
16 case, each sub-file should preferably begin
17 with an intra-frame.

18 Those are some of the further
19 implications, and I have considered those.
20 I've even pointed them out, I think, in my
21 original declaration or --

22 Q Okay. Show me where.

23 A Or certainly in response to
24 Dr. Jeffay's statements that I have not.

25 Q Okay.

1 I want to talk about in your
2 original declaration. Show me where you point
3 those out.

4 A Okay. So I don't remember every
5 word, but I know that has been an issue. You
6 know, I definitely considered exactly this
7 portion of -- of Leaning prior to submitting my
8 original declarations.

9 And certainly, actually, I
10 believe this actually says more than the --
11 than the specifications of the challenged
12 patents do with respect to the -- the -- the
13 MPEG standard and having each sub-file starting
14 with an I-frame.

15 (The deponent read the
16 document.)

17 A Well, okay, if you look at -- hold
18 on.

19 (The deponent read the
20 document.)

21 A So if you look at page 30 at the very
22 bottom, there's a citation to page 16, lines 6
23 through 10. And lines 6 through 10 talk
24 about -- I'll start from the second sentence.

25 "In the simpler version, where

1 there is only one recording, the system differs
2 from the audio version only in that the file is
3 a video file (e.g. in H.261 or MPEG format) and
4 the player program incorporates a video
5 decoder. The manner of partitioning the file
6 into sub-files is unchanged."

7 But now it's referring to this
8 MPEG format which now down below, in the
9 paragraph starting at line 17, going through
10 20, 23, it talks about, "Such systems (for
11 example the MPEG standard) generate a mixture
12 of independently coded frames and predictively
13 coded frames; in this case each sub-file should
14 preferably begin with an intra-frame."

15 So it's really saying -- it's
16 talking about the partitioning of an MPEG
17 format file. And I refer to that section. And
18 then a few paragraphs later, the second
19 paragraph after what I cited, it goes into
20 detail about how to partition an MPEG file.

21 So that's at least one place
22 where I refer to this page of Leaning which
23 talks about -- and the section, specific
24 section discussing MPEG-formatted files and
25 partitioning a file, which is described a

1 little -- in a little more detail a couple
2 paragraphs later.

3 I can look for more, if you'd
4 like.

5 Q Yeah, sure, let's make sure we get
6 them all.

7 A I cite to column 16, lines 6 through
8 12, again, in paragraph 67. That's -- that's
9 kind of the same original top part, which is
10 explained further in detail later.

11 (The deponent read the
12 document.)

13 A Well, I do see another citation to
14 Leaning. But this is with respect to the
15 claim 5 analysis, but I cite to -- on page 57
16 near the bottom, 16:11 through 18:17, it
17 includes all this material, including what we
18 were just looking at.

19 But it is with -- you know, that
20 is within the context of claim 5.

21 Well, just scanning through it
22 just now, that's what I've seen with respect
23 to -- to that reference.

24 Actually, here there's a -- oh,
25 sorry, that's the... okay.

1 I mean, that's what I see right
2 now. It's possible I may have missed -- missed
3 some or -- or missed some within a broader
4 citation or missed some just in my current look
5 through the '772 declaration -- through my '772
6 declaration.

7 Q Okay.

8 A And that would be just for the
9 opening declaration. I believe I addressed
10 this in the supplemental as well.

11 Q Okay.

12 A As -- in response to Dr. Jeffay's
13 arguments.

14 Q All right.

15 So just focusing on that section
16 on page 16, then, of Leaning that you were
17 citing to, what, then, is the change that
18 Leaning is applying here that you're relying
19 on?

20 MS. FINGER: Object to form.

21 A What are you referring -- you mean in
22 my analysis? What are you talking about?

23 Q Yeah.

24 I mean, in your supplemental
25 declaration, paragraph 87, you said you're --

1 you say a person of ordinary skill in the art
2 would understand -- readily understand what
3 changes would need to be made, including the
4 changes Leaning supplies. And in your answer,
5 you referred me to the section on page 16 of
6 Leaning.

7 So can you explain to me what
8 the change is that Leaning is describing on
9 page 16 that you're talking about?

10 A Well, as I cited to and we talked
11 about, page 16 of Leaning, lines -- starting at
12 line 7, "In the simpler version, where there is
13 only one recording, the system differs from the
14 audio version only in that the file is a video
15 file and the player program incorporates a
16 video decoder." And there was a parenthesized
17 examples of video files which include H.261 or
18 MPEG format.

19 And what's supplied by Leaning
20 is, in the case where it's an MPEG file, in
21 this case, each sub-file should preferably
22 begin with an intra-frame. And that's one of
23 the things expressly supplied by Leaning as a
24 way to partition if switching, referring to
25 switching data rates, are to be permitted.

1 And in that case, in the case of
2 now when Leaning is -- is applied to video,
3 then each sub-file should preferably begin with
4 an I-frame.

5 And furthermore, if there's --
6 there's another case that Leaning talks about
7 for video recordings, "where each frame of a
8 picture" -- and this is -- literally comes from
9 line 18 of page 16.

10 "Where each frame of a picture
11 is coded independently, it is sufficient that a
12 sub-file contains a whole number of frames of a
13 picture."

14 So in that case, that's a way to
15 partition the independently -- a recording
16 where each -- each frame is coded
17 independently. That's -- that's a
18 consideration -- a further implication that I
19 did consider that Leaning expressly teaches;
20 that in that case, it's sufficient that a
21 sub-file contains a whole number of frames of a
22 picture.

23 And so that's -- those are some
24 of the further implications that I did
25 consider, that Leaning incorporates expressly

1 some -- some ways to partition the video
2 recordings.

3 Q In your answer, you used the word
4 "I-frame."

5 Is that the same as
6 "intra-frame" in Leaning? Is that what you're
7 referring to?

8 A So I didn't hear the first --

9 Q Yeah. Let me start over.
10 In your answer just now, you
11 used the term "I-frame." Is that the same
12 thing as an "intra-frame" that Leaning is
13 referring to?

14 A Yes, yes. I'm sorry. I -- that's
15 the -- yeah, "intra-frame" and "I-frame" are
16 referring to the same thing.

17 Q Okay.
18 What is that?

19 A That's -- an I-frame or intra-frame
20 is used here in Leaning as an independently
21 coded frame. And that has the same meaning in
22 the MPEG standards. An independently coded
23 frame is known as an I-frame.

24 Q So "independently coded" then means
25 it doesn't depend on any other frames? Is that

1 what that means?

2 A In MPEG, that would be the meaning,
3 is that the frame is encoded only based on
4 information within the frame -- that single
5 frame itself.

6 Q Okay.

7 Leaning goes on in the next
8 sentence to talk about H.261 -- the ITU H.261
9 standard, correct?

10 A It does go on to talk about it, yes,
11 in the next paragraph.

12 Q And Leaning says that standard does
13 not provide for the frequent, regular inclusion
14 of intra-frames, correct?

15 A That's what Leaning says.

16 Q And he calls that an "inter-frame
17 coding system"; is that right?

18 MS. FINGER: Object to form.

19 A Leaning uses the term "inter-frame
20 coding systems" at least in that -- that
21 paragraph, starting at line 24 of page 16.

22 Q And was that -- is that a term used
23 in the art at the time, "inter-frame coding
24 systems"?

25 A Well, I think what -- there are

1 coding systems that -- that have frames that
2 can point to other frames' data, and sometimes
3 that's also talked about as predictively coded
4 frames, which in the previous paragraph at the
5 end, it refers to an MPEG.

6 But I think the meaning is
7 similar, which is unlike a frame which is
8 independently coded based on only data within
9 the frame itself, there are definitely encoding
10 methods where encoding a frame, one encoder may
11 refer to data that's in a previous frame, or
12 sometimes a success -- successive frame, in
13 order to tell the encoder or tell the decoder
14 how to properly decode the image. And that can
15 sometimes be an efficient way of encoding
16 video.

17 But also, you know,
18 independently coding frames can also have their
19 own benefits as well, and Leaning expressly
20 talks about the case where video recordings are
21 recordings where each frame of a picture is
22 coded independently.

23 Q Okay.

24 If you move down to your
25 supplemental declaration, paragraph 95.

1 A Okay.

2 Q Do you see that paragraph?

3 A Yes.

4 Q You quote there from Leaning where it
5 refers to another patent. You describe that as
6 Leaning's international patent application
7 number W098/26604.

8 Do you see that?

9 A Yes.

10 Q So were you saying that in -- in
11 implementing Leaning's teaching, that a person
12 of ordinary skill in the art would have also
13 implemented the principle that's described in
14 that patent application?

15 MS. FINGER: Object to form.

16 (The deponent read the
17 document.)

18 A First of all, the problem that's
19 being described in -- in the cited passage,
20 which has come from line -- page 17 of Leaning,
21 lines 7 through 10, which is the -- it's saying
22 the -- it's solving a problem, and it's
23 referring to this, and it's talking about -- I
24 think this is talking about -- I think it's
25 elsewhere that it talks about it being bridging

1 frames or a sequence of frames which bridges
2 the gap between the last frame of the
3 proceeding sequence and the first frame of the
4 new sequence.

5 This is really discussing the
6 problem of mistracking when you're doing a
7 fast-forward mode where the fast-forward is
8 actually encoded as a separate sub-file in
9 itself, and then switching to a -- back to a
10 regular, normally -- regular rate file, that
11 there could be mismatches between -- if you're
12 presented with a predictively coded frame for
13 which it does not have the preceding frame.

14 And so in that case, it talks
15 about using these bridging files, and that's a
16 way of solving that problem.

17 But if you also follow the
18 teachings of Leaning where it says that each
19 sub-file should preferably begin with an
20 intra-frame, then you don't -- and again, this
21 problem was describing the change between
22 normal, single-rate playback and, you know,
23 fast-forward playback mode and then back again.
24 And it's coming back and confronted with a
25 sub-file that -- that has a predictively coded

1 frame in it that refers to data that's -- it's
2 not -- that is not an I-frame.

3 But, first of all, if you do
4 start every sub-file with an I-frame, then upon
5 rate switching, there is no mistracking
6 problem. There would -- there would not be any
7 mistracking problem, because every frame starts
8 with an I-frame. Every sub-file, that is,
9 starts with an I-frame.

10 And that's -- that's what
11 Leaning teaches on page 16 at, you know,
12 lines 18 through 23.

13 So this is referring to even if
14 you had a situation where a sub-file refers to
15 a predictively coded frame, there's still a
16 solution that it -- is another file that
17 bridges between -- between the two that
18 involves the encoding of an intermediate
19 sequence of frames which bridges the gap
20 between the last frame of the preceding
21 sequence and the first frame of the new
22 sequence.

23 So that's in the case where --
24 where the terminal is presented with a
25 predictively coded frame for which it does not

1 have the preceding frame.

2 And even in that case, Leaning
3 is proposing a solution to that. But that
4 is -- that is not necessary in the case where
5 every frame -- every sub-file begins with an
6 I-frame, as Leaning also expressly teaches.

7 Q Okay.

8 At page 18, line 18, Leaning
9 says the same process could be used for rate
10 switching, correct?

11 A Page 18, line 18?

12 Q Mm-hmm.

13 (The deponent read the
14 document.)

15 A I mean, it -- it does say that, and
16 it's, again, proposing a solution where, in
17 Leaning, if -- if a sub-file did not begin with
18 an I-frame, that is, it was a predictively
19 encoded frame that depended on another frame,
20 that you could use these bridging sub-files.

21 But these bridging sub-files
22 would not be needed at all if every frame
23 started with an I-frame, which Leaning also
24 teaches, and expressly does so on page 16.

25 So Leaning is covering a lot of

1 bases here. So yes, it's teaching, yeah,
2 every -- you should start every file with an
3 I-frame, but if not, there's still a solution
4 to this and it involves these bridging
5 sub-files.

6 Q Okay.

7 So which technique are you
8 relying on in this case?

9 A Well, what I pointed to in my
10 original declaration was that, you know, that
11 Leaning talked about -- about applying the same
12 principle to delivery of video recordings, and
13 of course, video also with accompanied
14 soundtrack.

15 And "In the simpler version,
16 where there's only one recording, the system
17 differs from the audio version only in that the
18 file is a video file (e.g. H.261 or MPEG
19 format) and the player program incorporates a
20 video decoder. The manner of partitioning the
21 file into sub-files is unchanged."

22 And so I have cited to that in
23 my opening declaration. And it goes on to
24 explain in further detail about MPEG-formatted
25 files and that -- and further types of files,

1 such as independently -- where every frame is
2 independently coded for video recording. And
3 in that case, partitioning -- it would be
4 sufficient to partition so that each sub-file
5 contains a whole number of frames of a picture.

6 But in these MPEG systems that
7 have predictively coded frames, that there are
8 some frames that could point to data in earlier
9 or later frames. In this case, each sub-file
10 should preferably begin with an intra-frame.
11 And that's expressly what Leaning says in lines
12 23 and 24.

13 And so, you know, I pointed to
14 the teachings in Leaning as to why Leaning
15 discloses the challenged claims, and I cited to
16 passages in Leaning that point to, you know,
17 for example, MPEG-formatted video files.

18 And I think this additional
19 detail in Leaning, especially in paragraphs --
20 sorry, page 16, lines 17 to 24, actually, I
21 think has more detail about how long the
22 partition is in these sub-files than the
23 original patents do, which I think indicates to
24 me that that was knowledge -- this kind of
25 thing was within the knowledge of a person of

1 ordinary skill to begin with.

2 Q Well, okay, so you mentioned a lot of
3 things there.

4 Is H.261 one of them? Are you
5 relying on H.261 in this case?

6 MS. FINGER: Object to form.

7 A Well, I mean, my original declaration
8 lays out all my -- my -- my claim mappings.

9 Are you referring to something
10 in one that you want me to take a look at?

11 Q In connection with the teachings of
12 Leaning you're relying on to supply the
13 features of claim 1, would you be relying on
14 Leaning's disclosure of H.261?

15 MS. FINGER: Object to form.

16 A I mean, my analysis is laid out in my
17 opening declaration.

18 Is there something there you
19 want me to look at?

20 Q Were there MPEG encoders available at
21 the time of the invention of the '772 patent?

22 MS. FINGER: Object to form.

23 A Sorry, did you say "decoders" or
24 "encoders"?

25 Q Encoders.

1 A Encoders.

2 I don't know if I addressed this
3 in any background, but yeah, I mean, there
4 were -- there were encoders available back
5 then.

6 Q And at the time, would an encoder --
7 would an MPEG encoder have included an I-frame
8 as the first file -- sorry, as the first frame
9 of a file it was encoding?

10 MS. FINGER: Object to form.
11 Scope.

12 A Well, I mean -- I mean, off the top
13 of my head, I can't see a reason why an MPEG
14 encoder would not make the first frame an
15 I-frame. But I -- if you want me to take a
16 look at a specific limitation. I don't have
17 those in front of me.

18 Q Do you want to take a break? I don't
19 remember how long we've been going.

20 MS. FINGER: About another hour.

21 MR. WILLIAMS: Take five
22 minutes?

23 THE DEPONENT: Sure, we can do
24 five minutes.

25 (Recess.)

1 BY MR. WILLIAMS:

2 Q Okay.

3 In your supplemental
4 declaration, you have a section about claim --
5 '772, claim 8, that starts at paragraph 139, I
6 believe; is that right?

7 A Sure, I think that's -- that's
8 correct.

9 Q Okay.

10 And at the -- at paragraph 141,
11 you talk about -- you talk about incrementing
12 the file names in Leaning; do you see that?

13 MS. FINGER: Object to form.

14 A Yes.

15 Q The last sentence in that paragraph
16 you cite to Leaning at page 5; is that right?

17 A Yeah, I see that citation.

18 Q Okay.

19 So this particular section is
20 in -- in the -- in the section of Leaning
21 relating to audio files, correct?

22 MS. FINGER: Object to form.

23 (The deponent read the
24 document.)

25 A I mean, the cited passage at

1 column 5, line 15, starts, "The player program
2 determines from the file the audio encoding
3 used in the sub-file," and goes on.

4 And while it does say there
5 audio encoding, it does -- this whole section
6 is prefaced, as I state earlier, right after
7 the figure descriptions is -- in column 2,
8 line 5, it does say how the system -- in
9 line 8, "The system may be used to convey video
10 signals instead of, or in addition to, audio
11 signals."

12 So while this description is --
13 is saying "audio encoding," you know, a person
14 of ordinary skill reading this understands this
15 teaching about -- that the system can also
16 convey video files -- video signals as well as
17 audio signals.

18 Q Okay.

19 And you refer here in your
20 declaration to Leaning's discussion of making a
21 note of the play time.

22 Do you see that?

23 A Sorry, I lost the -- the place in
24 the -- my supplemental declaration.

25 What page are you on?

1 Q Me, too.

2 A Oh, here, 76?

3 Q Yeah, 141. Yeah, paragraph 141,
4 right?

5 A Yes.

6 Sorry. What was the question
7 again there, please?

8 Q Yeah, I want to ask you about your
9 understanding of this language you're quoting
10 from in Leaning having to do with making a note
11 of the play time.

12 MS. FINGER: Object to form.

13 A Yeah.

14 So the whole cited passage --

15 MS. FINGER: One second. I
16 don't think there's a question pending.

17 Q Do you see that section that I'm
18 referring to?

19 A I think so.

20 Q Okay.

21 So what is your understanding of
22 what Leaning means by making -- what is the
23 play time he's talking about when he says make
24 note -- making a note of the play time?

25 MS. FINGER: Object to form.

1 (The deponent read the
2 document.)

3 MS. OSMAN: Can we go off the
4 record for a second?

5 MR. WILLIAMS: Yeah, we can go
6 off the record.

7 (Discussion off the record.)

8 BY MR. WILLIAMS:

9 Q I think you were answering a
10 question, Dr. Houh. Did you finish that or --

11 A I'm still looking through materials.

12 (The deponent read the
13 document.)

14 A Sorry, could you repeat the question,
15 please?

16 Q What does Leaning mean by making a
17 note of the play time?

18 MS. FINGER: Object to form.

19 (The deponent read the
20 document.)

21 A So what I'm talking about here --
22 what Leaning's talking about is that it talks
23 about having filenames that are sequentially
24 numbered, 0 -- six zeros .bin, leading zeros
25 1.bin, leading zeros 2.bin, and so on.

1 And so Leaning talks about how
2 filenames which include a serial number
3 indicative of their sequence in the original
4 file, and that's basically the -- the ordering
5 of the -- of the files that Leaning teaches is
6 one way to order the sub-files.

7 And so that Leaning is saying
8 here that when a sub-file is received and
9 decoded, the player will then make a note of
10 the play time of this sub-file. So if it's
11 receiving a -- the 0 one, that would start at
12 time 0. The next one would start at time based
13 on how long 0 was. But that would aid in
14 ordering the serially received sub-files into a
15 playback time.

16 But, I mean, I think having the
17 serial numbers alone would -- would also enable
18 the -- the device to order them in the way that
19 they're intended based on their serialized
20 filenames, which indicate their sequence in the
21 original file.

22 And I think somewhere Leaning
23 did say -- I was looking for this just now --
24 that, you know, it could be that it's
25 preferable that the files each contain the same

1 amount of data.

2 So in that case, the sequence
3 number would -- would be akin to a time
4 sequence just with different units, so that if
5 every -- if every one was four seconds long,
6 the first one would play at time 0. The second
7 one, which is the serial number 1, would play
8 at time 4 seconds. Serial number 2 would play
9 at time 8 seconds and so on, in that case where
10 there -- all the files preferably are the same
11 duration and, in that example, a duration of 4
12 seconds.

13 Q Okay.

14 So in the context of Leaning
15 line -- well, Leaning page 5, line 17 here, the
16 term "play time," as you understand it, is the
17 time at which this file would begin playing and
18 it's not the length of the file; is that right?

19 MS. FINGER: Object to form.

20 A Well, both can be known, but I think
21 the play time differs in the duration of --
22 playback duration of a sub-file.

23 So I think what time would this
24 file be playing in the normal sequence of files
25 to be played. And I think that's why I use the

1 term "play file." It means what it says.

2 Q Okay.

3 I want to turn to your reply
4 declaration in connection with the '234 patent
5 now, which is Exhibit --

6 MR. ZIMMERMAN: If we're going
7 to switch over, could we have a few-minute
8 break just to --

9 MR. WILLIAMS: You're going to
10 flop?

11 MR. ZIMMERMAN: Yes.

12 MR. WILLIAMS: Yeah, we can go
13 off the record.

14 (Recess.)

15 BY MR. WILLIAMS:

16 Q Did you find your '234 supplemental
17 declaration, Dr. Houh? It should be --

18 A I believe so, yes.

19 Q It's behind Tab 6 in your binder.

20 A Yes.

21 Q It's designated Exhibit 1022 in
22 the -- in the IPR number, correct?

23 A Yes, I see that, for the matter
24 ending in 940.

25 Q Yes.

1 And that's your signature in the
2 back of the document?

3 A Yes, it is.

4 Q And have you had a chance to review
5 this document to determine if there's anything
6 that you'd like to change in it?

7 A I didn't see any typos or anything in
8 my review and I certainly stand by what I read
9 here.

10 Q In general, the analysis that you
11 have in the '234 supplemental declaration, do
12 you believe that this analysis is consistent
13 with the analysis that you've been using in
14 the -- in the other supplemental declaration
15 that we were talking about today?

16 MR. ZIMMERMAN: Objection, form.

17 A Why -- I don't know what you'd be
18 referring to, but if you want to show me
19 something, we can look at it.

20 Q No, the question was, were you trying
21 to be consistent with your testimony in the
22 other case when you prepared this document?

23 MR. ZIMMERMAN: Objection.

24 Form.

25 (The deponent read the

1 document.)

2 A Well, I -- I stand by my opinions
3 here. I think if -- if you believe I've said
4 something inconsistent, I expect you would ask
5 me about it.

6 Q Yeah. And I'm not suggesting that.

7 The reason I'm asking, Dr. Houh,
8 is that we just -- we spent a lot of time,
9 obviously, going through your analysis in
10 connection with the other three cases, and what
11 I'm trying to determine is whether the analysis
12 that you testified about earlier today would be
13 also applicable to this declaration to the
14 extent that the arguments appear in both
15 places?

16 MR. ZIMMERMAN: Objection.
17 Form. Is there a question?

18 Q Yes.

19 Do you understand it?

20 A I mean, I stand by what I've written
21 here in this declaration. If you want to ask
22 me about anything, I expect you will.

23 Q Okay. Sure.

24 Were you trying to be
25 inconsistent in preparing this declaration?

1 MR. ZIMMERMAN: Objection.

2 Form.

3 A I try to prepare the best declaration
4 that I can, typically.

5 Q What do you mean by "best"?

6 A That reflects the analysis in a
7 proper -- what I believe a proper analysis, and
8 I try to do a generally -- a thorough job.

9 Q Okay.

10 Is the Leaning reference that
11 you talk about in this declaration the same one
12 as the Leaning reference we've been talking
13 about today?

14 A Yes.

15 (Pause.)

16 Q Turn to paragraph 24.

17 A Okay.

18 Q In that paragraph, you say, "This
19 incorrectly assumes that clearing the buffer is
20 required."

21 Do you see that?

22 A I do see that.

23 Q What did you mean by "clearing the
24 buffer" there?

25 A Well, I'm responding to Dr. Jeffay's

1 arguments about how Leaning has content-based
2 discontinuities because when the buffer is
3 cleared, any sub-file stored in the buffer at
4 the time that the rate shift occurs will be
5 skipped because they're removed from the buffer
6 and not requested.

7 So I'm responding in the sense
8 Dr. Jeffay is using that term. And
9 furthermore, as I've said before even earlier,
10 but certainly as -- as I think I discuss
11 above...

12 (The deponent read the
13 document.)

14 A For example, in Section B above,
15 there's one place I discuss the -- how Leaning
16 teaches video streaming without clearing the
17 buffer.

18 So that's what I mean by
19 incorrectly assuming that clearing the buffer
20 is required, and that's an assumption that --
21 that I say is incorrect that Dr. Jeffay has
22 appeared to make.

23 Q So in this paragraph 24, when you say
24 "clear the buffer," do you mean play out the
25 buffer or do you mean delete the contents of

1 the buffer?

2 A Well, I'm using it in the sense of
3 what Dr. Jeffay is using it where he says that
4 the contents are -- well, he -- Dr. Jeffay says
5 in paragraphs I cited here, 78 to 83 -- and I
6 can look to see where that comes from -- but
7 that any sub-files stored in the buffer at the
8 time the rate shift occurs will be skipped
9 because they're removed from the buffer and not
10 requested.

11 And so Dr. Jeffay is saying that
12 in his view, clearing the buffer involves
13 removing data from the buffer. And so I'm just
14 responding to Dr. Jeffay's arguments.

15 But my point here is that that's
16 assuming incorrectly that the -- that the
17 clearing the buffer is required, which -- which
18 it is not, as discussed above.

19 Q Okay.

20 When you say "which is not,"
21 you're saying what is -- you don't have to
22 remove the contents of the buffer? Is that
23 what you mean?

24 MR. ZIMMERMAN: Objection, form.

25 A That clearing the buffer as

1 Dr. Jeffay understands it from his declaration,
2 which I'm replying to or responding to, he's
3 saying that -- that they are removed from the
4 buffer and not requested.

5 And so that's -- that's why --
6 part of the reason Dr. Jeffay says that Leaning
7 has content-based discontinuities. But the --
8 I mean, that's why I'm saying this --

9 And also I talked earlier how
10 there's, in a section titled "Leaning Teaches
11 Video Streaming Without Clearing the Buffer,"
12 that it's not required, and so Dr. Jeffay
13 assumes that clearing the buffer is required,
14 which is -- is not as I discuss above, and
15 that's what I say here.

16 Q Okay.

17 What about -- if you turn to the
18 next page, page 13.

19 At the end of paragraph 24, you
20 have a footnote 1; do you see that?

21 (The deponent read the
22 document.)

23 A Yes.

24 Q Okay.

25 And you say in that footnote

1 that, "As I explained above, a POSITA would
2 have reasonably understood 'clearing' the
3 buffer to include simply letting the sub-files
4 already in the buffer play out rather than
5 deleting already downloaded and decoded
6 sub-files."

7 Is that right? Is that what you
8 say?

9 A That's what the footnote says. I
10 believe you read it correctly.

11 Q Okay.

12 And the quote there, you have
13 the word "clearing" in quotes.

14 Are you referring to the word
15 "clearing" as it appears in Leaning or are you
16 referring to something else?

17 MR. ZIMMERMAN: Objection to
18 form.

19 A Well, what Leaning is teaching here
20 is that, as I say at the bottom of page 12,
21 "Leaning expressly teaches: 'In the case of
22 rate switching, it is, if not actually
23 essential, highly desirable that the sub-file
24 boundaries are the same for each rate, so that
25 the first sub-file received for a new rate

1 continues from the same point in the recording
2 that the last sub-file at the old rate ended.'"

3 And -- and, you know, we've seen
4 at least part of that earlier, but what I'm
5 saying here is that in the case of the buffer
6 being cleared...

7 (The deponent read the
8 document.)

9 A Yeah, so Dr. Jeffay has kind of put
10 together an annotated image, and it's -- it's
11 what Dr. Jeffay says buffer cleared -- that
12 he's added this annotation on page 45 in
13 paragraph 79. I think they're the same. He's
14 referring to paragraphs 78 to 83 that I'm
15 pointing to his -- Dr. Jeffay's analysis for.

16 And he's -- he's added these
17 annotations about buffer cleared with respect
18 to when the playback is stopped.

19 Q Where are you? What page are you on?

20 A Sorry, I'm on -- in paragraph 79 of
21 Dr. Jeffay's Exhibit 2141.

22 The copy I have in front of me
23 is the 919 matter, but I believe -- I -- well,
24 I think it's -- if I recall correctly -- I'm
25 not -- it's largely the same for the 940

1 matter.

2 Q Mm-hmm.

3 A That Dr. Jeffay is using this buffer
4 cleared, and he's talking about temporal
5 discontinuities because the buffer was empty as
6 part of the rate shift, and there's a waiting
7 period when the buffer refills.

8 And he's talking about this
9 content-based discontinuity. And -- and I
10 think what he's referring to is a previous
11 annotation in paragraph 72 of -- his annotation
12 of my excerpt of the flowchart on page 10. And
13 that's -- he's just used the wording "buffer
14 cleared."

15 So what I'm referring to here is
16 Dr. -- what I understand is Dr. Jeffay's
17 interpretation of "cleared" which derives from
18 the "Clear Buffer" reference in the flowchart,
19 for example, under the label "Stepup."

20 And so that's, I think, what I
21 understand that Dr. Jeffay is referring to,
22 that -- that he's saying that there is -- and
23 he talks about it in paragraph 79. But he's
24 incorrectly assuming that -- that the clear
25 buffer in that case would be removing sub-files

1 from the buffer.

2 Q And it's -- I'm sorry, you're saying
3 it's incorrect why?

4 A For a number of reasons. So Leaning
5 talks about how these -- all these are
6 continuous. And at a rate shift, you already
7 have the -- these files at the old rate in the
8 buffer. And clearing the buffer would simply
9 involve playing back the content you already
10 have at the old rate.

11 And remember, the clear buffer
12 derives from the fact that the card has to be
13 reset, the sound card has to be reset. And I
14 think it's understood that -- and that's only
15 some sound cards.

16 And that if you have the data
17 already sampled at the old rate, clearing the
18 buffer would include -- a POSITA would have
19 reasonably understood that to include simply
20 letting the sub-files already in the buffer
21 play out rather than deleting already
22 downloaded and decoded sub-files.

23 I think Dr. Jeffay is trying to
24 interpret this in a way that -- that he sees
25 would cause interruptions, and that's not the

1 way a POSITA would view Leaning. They would
2 see the data is already there. You're
3 already -- the sound card's already at that
4 rate. You have data in the buffer at that
5 rate. You can clear the buffer by -- by
6 letting the buffer clear and play out all the
7 samples at the old rate before you put in
8 samples at the new rate.

9 And then you can reset the sound
10 card so that the new samples at the new rate
11 play out at the proper frequency as opposed to
12 at some different play-out rate which cause --
13 would cause the -- a shift in frequency of --
14 of the -- of the new rate audio file.

15 And that's -- that's one reason.
16 At least one reason there.

17 And, you know, what I explain
18 in -- in paragraph 19 is that there's no video
19 card that required resetting. There would be
20 no video card that would require resetting, and
21 so no interruptions upon rate switching since
22 every sub-file begins with an independently
23 decoded I-frame. And for video, I do explain
24 that that's not the situation.

25 Furthermore, Leaning teaches a

1 solution where you up-sample everything in the
2 audio so that resetting the card and having to
3 wait for the buffer to clear by playing it out
4 wouldn't even be necessary, because you'd never
5 have to rate switch the card by resetting it.

6 Q Let me ask you about the part of your
7 answer involving a sound card, because I'm not
8 sure I understood it.

9 You said you play out all the
10 samples at the old rate before you put samples
11 at the new rate and then you reset the sound
12 card; is that right? I mean, that's what you
13 said.

14 Is that what you meant?

15 MR. ZIMMERMAN: Objection, form.

16 A Well, Leaning teaches that some sound
17 cards need to be reset to change the sampling
18 rate, and so I guess maybe just the order, but
19 you'd reset the sound card to be able to change
20 the playback rate for new samples.

21 So obviously you wouldn't put
22 the new samples into the buffer. You would put
23 the new samples in the buffer after the rate
24 has been reset.

25 But -- but you need to change --

1 for some old sound cards you need to actually
2 reset the card to change the playback rate, and
3 that's what Leaning's teaching.

4 But in video, it's -- it's not
5 necessary, as I explain on pages 9 and 10 of my
6 supplemental declaration for the '234 patent.

7 So that's -- that's -- that's a
8 reason that I say that -- in whatever paragraph
9 I was looking about -- at earlier, "as
10 explained above."

11 Q So if you put the new samples into
12 the buffer after the rate has been reset,
13 wouldn't that lead to an interruption in
14 playback while that was occurring?

15 MR. ZIMMERMAN: Objection to
16 form.

17 A Well, as I explained, that's not
18 necessary at all for video. Video cards don't
19 work the same way. So for video playback,
20 there would be no need to do any resetting.
21 That's not the way video cards work, as
22 distinguished from the way some old sound cards
23 work with respect to videos and playback
24 sampling rate.

25 So as I explain in Section B

1 starting on page 9, Leaning is talking about
2 "The same principle may be applied to -- to the
3 delivery of video recordings. The system
4 differs from the audio version only in that the
5 file is a video file (for example an MPEG)" --
6 I highlight MPEG format. "And the player
7 program incorporates a video decoder. But the
8 manner of partitioning the file into sub-files
9 is unchanged."

10 But then Leaning teaches a
11 couple of ways to, you know, to consider the
12 implications of having video files, especially
13 MPEG, and explains "that each video sub-file
14 should begin with an I-frame to avoid decoding
15 errors when rate-switching between copies."

16 And "A POSITA would understand
17 that -- that video such as MPEG would have been
18 decoded using software incorporated into the
19 player program." And "Thus, it would not make
20 sense to clear the buffer because there would
21 be no video card that required resetting and no
22 interruptions upon rate switching since every
23 sub-file begins with an independently decodable
24 I-frame."

25 Q Let me ask you to go to paragraph 27

1 of your supplemental declaration.

2 A Okay.

3 Q And this, as I understand, this
4 paragraph is dealing with an argument that --
5 that you described as perhaps an implicit
6 argument that the claims require receiving
7 streamlets out of order.

8 Do you see that in paragraph 27?

9 MR. ZIMMERMAN: Objection to
10 form.

11 A I see those words that the first
12 sentence includes.

13 Q Okay.

14 And then you're analyzing, as I
15 understand it, why you believe Leaning would
16 teach even that, if that were required,
17 correct?

18 MR. ZIMMERMAN: Objection to
19 form.

20 A Yeah, I'm saying at the end of that
21 sentence, "Leaning also contemplates this
22 scenario."

23 Q Then at the bottom of that page, you
24 say, "Second, Leaning explains that when a user
25 is viewing a live stream, to guard against

1 playback running faster than the generation of
2 the sub-files for the live stream, 'it may be
3 arranged that the player program checks each
4 sub-file it receives to ascertain whether it is
5 marked with a later time than the previous one:
6 if not the sub-file is discarded.'"

7 Do you see that?

8 A Yes.

9 Q How does that support, if at all,
10 your argument that Leaning teaches rearranging
11 sub-files if they were out of order?

12 MR. ZIMMERMAN: Objection to
13 form.

14 (The deponent read the
15 document.)

16 A What this guards against is if you
17 receive -- if you -- you're currently playing
18 or you've received a sub-file marked with a
19 time, say time A, and then if you receive a
20 sub-file marked before time A, you can guard
21 against putting a later file after -- sorry, an
22 earlier file after a later file. And so then
23 that helps guard against arranging files in the
24 wrong order.

25 Q You have a section that begins on

1 page 25 entitled "Secondary Considerations of
2 Non-Obviousness."

3 Do you see that?

4 A Yes.

5 Q In paragraph 44 of that section, you
6 note that, "Dr. Jeffay also faults me for not
7 addressing the ITC Decision regarding secondary
8 considerations for related patents."

9 Do you see that?

10 A Yes.

11 Q Do you -- did you address that ITC
12 decision in your opening declaration in this
13 case?

14 MR. ZIMMERMAN: Objection.
15 Form.

16 (The deponent read the
17 document.)

18 A So I'm looking at the table of
19 contents for the -- my -- the initial opening
20 declaration for the '234 matter, ending in 940.

21 I don't see in the table of
22 contents anything addressing secondary
23 considerations, but I understand that they
24 wouldn't have been raised until the patent
25 owner --

1 That there was nothing -- you
2 know, as of the opening declaration, there was
3 no evidence submitted in this case regarding
4 that.

5 But my point here is that "I
6 have extensively considered and opined about
7 the purported evidence of secondary
8 considerations, including the ITC decision in
9 the related Ogdon IPR proceedings where the
10 Board came to a different conclusion that the
11 ITC -- than the ITC" -- I think that should be
12 "than" the ITC -- "and found no nexus for
13 secondary considerations and gave the evidence
14 little to no weight."

15 So I have previously, in other
16 cases with the same -- at least Aylo, Dish
17 Ogdon IPRs. And there, the board came to a
18 different conclusion than the ITC, and I did
19 consider it in that case.

20 And I think if you look at the
21 materials considered for the -- my opening
22 declaration, I think I referred to some ITC
23 documents in there.

24 But I'm merely pointing out
25 that -- that while Dr. Jeffay faults me for not

1 addressing the ITC decision, I think after he
2 raised it, I should have an opportunity to
3 reply -- respond to his assertions about any
4 secondary considerations, including what the
5 ITC may have found.

6 Q Have you ever spoken to any employees
7 at British Telecom in connection with this
8 case?

9 MR. ZIMMERMAN: Objection to the
10 form.

11 A Not in connection with this case, no.

12 Q And what about -- what about Anthony
13 Leaning? Have you spoken to Anthony Leaning in
14 connection with this case?

15 MR. ZIMMERMAN: Objection to
16 form.

17 A Not -- not with connection to this
18 case, no.

19 Q And what about a gentleman named
20 Richard Whiting? Have you ever spoken to
21 Richard Whiting in connection with this case?

22 MR. ZIMMERMAN: Objection, form.

23 Counsel, do you mind speaking
24 up? We're having a little trouble hearing you
25 on this side of the table.

1 A No, not in relation to this case, if
2 you mean the case for the '234 patent.

3 Q Okay.

4 What about in connection with
5 any of the IPRs that you've been opining about
6 today? Have you had a conversation with any of
7 those gentlemen in connection with those cases?

8 MR. ZIMMERMAN: Objection, form.

9 A No, not for the purposes of this
10 case -- these cases today.

11 Q Okay.

12 Can you describe how you
13 prepared for today's deposition?

14 MR. ZIMMERMAN: Objection, form.

15 I caution the witness not to
16 reveal any attorney-client -- attorney
17 communications.

18 A I reviewed some documents and I met
19 with attorneys.

20 Q For how long?

21 MR. ZIMMERMAN: Same objection.

22 A Probably 20 -- 20-plus hours,
23 24 hours, around there, worth of time.

24 Q When did that -- when did -- when did
25 those meetings take place?

1 MR. ZIMMERMAN: Same objection
2 and instruction.

3 A The meetings took place on Monday and
4 Tuesday this week.

5 Q Where did they take place?

6 MR. ZIMMERMAN: Same objection
7 and instruction.

8 A Monday's meeting was virtual.
9 Yesterday's meeting was in person here.

10 Q What attorney names do you remember
11 meeting with in connection with your
12 preparation?

13 A It was Parker, Ashley and Inge and
14 then Phil and Reba. I don't remember -- well,
15 Parker Zimmerman, right? Ashley Finger, Inge
16 Osman, Phil Sheng, Reba Rabenstein. Did I get
17 that right?

18 Q So did you meet with all five of them
19 at once or did you meet with them separately?

20 MR. ZIMMERMAN: Same objection
21 and instruction.

22 THE DEPONENT: Could you repeat
23 the whole instruction and objection, please?

24 MR. ZIMMERMAN: Objection, form.
25 Caution the witness not to

1 reveal any attorney communications. And to the
2 extent you can answer that without revealing
3 any privileged information, you can.

4 A Not everyone was present all the
5 time.

6 Q Okay.

7 Was there any time when they
8 were all present?

9 MR. ZIMMERMAN: Same
10 instruction.

11 A I -- I'm not sure.

12 Q During the in-person meetings, did
13 you have two separate meetings in connection
14 with the two different declarations you
15 prepared, or did you have one meeting where you
16 discussed both declarations?

17 MR. ZIMMERMAN: Objection to
18 form. Caution the witness not to reveal any
19 attorney communications or privileged
20 information.

21 To the extent you can answer
22 without revealing privileged information, you
23 can.

24 A Portions of the meetings were
25 dedicated to different clients.

1 Q So who are the clients that you've
2 been engaged by in these matters?

3 MR. ZIMMERMAN: Objection.
4 Form.

5 A In the '234 matter, I have been
6 retained by counsel for Aylo Freesites. And
7 that's for the matter ending in 940.

8 (The deponent read the
9 document.)

10 A And I've submitted declarations on
11 behalf of fuboTV Media, Inc., and Yanka
12 Industries for the three other matters ending
13 in 917, 918 and 919.

14 Q The meetings on Tuesday, did they all
15 take place in this -- this office where the
16 deposition is taking place?

17 MR. ZIMMERMAN: Objection to
18 form.

19 A I'm not sure if it's the same room,
20 but somewhere on this floor.

21 Q Same building, I mean.

22 A Yes.

23 Q Okay.

24 And when you say portions of the
25 meetings were dedicated to different clients,

1 do you mean that you were meeting with the fubo
2 attorneys to talk about the fubo case and then
3 separately meeting with the Aylo attorneys to
4 talk about the Aylo case?

5 Is that what you're saying?

6 MR. ZIMMERMAN: Objection to
7 form.

8 Caution the witness not to
9 reveal attorney communications or any
10 privileged information.

11 To the extent you can answer
12 without revealing such information, you can.

13 MS. OSMAN: I think we should
14 take a break and talk about this. This seems
15 to be directed to privileged information and I
16 want to make sure that we can answer without
17 revealing -- can we please go off the record.

18 MR. WILLIAMS: Sure.

19 (Recess.)

20 BY MR. WILLIAMS:

21 Q So do you need the question read
22 back?

23 A Sure.

24 MR. WILLIAMS: Can you read that
25 back?

1 (The deponent read the
2 document.)

3 MR. ZIMMERMAN: Objection, form.
4 Calls for privileged
5 information. Instruct the witness not to
6 answer.

7 MR. WILLIAMS: What's the basis
8 for the privilege of who he met with?

9 MR. ZIMMERMAN: This is getting
10 at deposition prep strategy, and that's
11 privileged information.

12 MR. WILLIAMS: You're saying who
13 he met with -- you're instructing him not to
14 answer about who he met with to prep; is that
15 right?

16 MR. ZIMMERMAN: No, that was not
17 your question.

18 Your question was who he met to
19 prep with, at what time, and the strategy of
20 the prep session, not just generally who he met
21 to prep with.

22 MR. WILLIAMS: There was nothing
23 about my question about getting strategy
24 questions.

25 So are you going to -- you're

1 instructing him not to answer, I guess?

2 MR. ZIMMERMAN: I'm instructing
3 him --

4 BY MR. WILLIAMS:

5 Q Are you taking that instruction?

6 A Yes.

7 MR. WILLIAMS: Okay. That's
8 fine. We'll take it up with the board. They
9 never called me back, incidentally.

10 Subject to those open issues, we
11 have no further questions.

12 Are you going to redirect?

13 MS. FINGER: We'll take a short
14 break.

15 MR. ZIMMERMAN: We'll take a
16 short break to discuss.

17 (Recess.)

18 MR. ZIMMERMAN: There are no
19 further questions.

20 MR. WILLIAMS: Any from you?

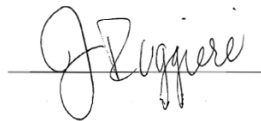
21 MS. FINGER: None from us.

22 MR. WILLIAMS: Okay. Anything
23 else?

24 (Whereupon, the proceedings
25 suspended at 5:26 p.m.)

C E R T I F I C A T E

I, Jill K. Ruggieri, Registered Merit Reporter and Certified Realtime Reporter, do certify that the deposition of HENRY H. HOUEH, PhD, in the above-captioned matter, on July 16, 2025, was stenographically recorded by me; that the witness provided satisfactory evidence of identification, as prescribed by Executive Order 455 (03-13) issued by the Governor of the Commonwealth of Massachusetts, before being sworn by me, a Notary Public in and for the Commonwealth of Massachusetts; that the transcript produced by me is a true record and accurate record of the proceedings to the best of my ability; that I am neither counsel for, related to, nor employed by any of the parties to the above action; and further that I am not a relative or employee of any attorney or counsel employed by the parties thereto, nor financially or otherwise interested in the outcome of the action.



Jill K. Ruggieri, RPR, RMR, FCRR, CRR

Transcript review was requested of the reporter.

Job No. CS7474828

1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
17
18
19
20
21
22
23
24
25

229

Job No. CS7474828
I have read the transcript of my deposition taken
on July 16, 2025. Except for any
corrections or changes noted above, I hereby

subscribe to the transcript as an accurate record
230

of the statements made by me.

Signed under the pains and penalties of perjury.

Deponent: _____ /____/2025

HENRY H. HOUH, PhD

On this ____ day of _____, 202__, before me,

the undersigned notary public, personally appeared

HENRY H. HOUH, PhD, who presented satisfactory

evidence of identification, to wit,

_____, and signed this document in my
presence.

Notary Public in and for _____

My commission expires _____

Job No. CS7474828

1 Parker G. Zimmerman, Esq.

2 pgzimmerman@venable.com

3 July 21, 2025

4 RE: Fubotv Media Inc, Et Al. v. Dish Technologies LLC
5 7/16/2025, Henry Houh (#7474828)

6 The above-referenced transcript is available for
7 review.

8 Within the applicable timeframe, the witness should
9 read the testimony to verify its accuracy. If there are
10 any changes, the witness should note those with the
11 reason, on the attached Errata Sheet.

12 The witness should sign the Acknowledgment of
13 Deponent and Errata and return to the deposing attorney.
14 Copies should be sent to all counsel, and to Veritext at
15 erratas-cs@veritext.com

16 Return completed errata within 30 days from
17 receipt of testimony.

18 If the witness fails to do so within the time
19 allotted, the transcript may be used as if signed.

20
21
22 Yours,

23 Veritext Legal Solutions
24
25

&	32:24,24 33:1	159:22 162:6	156 6:8 10:25
& 1:17	33:7,7 41:1	110 48:9	11:16 12:11
0	76:12,24 77:6	118 44:7,10,13	37:9
0 101:4 132:23	77:11,14,19,22	12 21:7 22:7	16 1:16 174:22
134:4,24	77:25 78:6	23:3 24:3,25	175:14 177:22
136:21 197:24	86:18 98:22	25:15 26:19	179:7 180:16
198:11,12,13	158:3 159:19	31:18,20	181:5,9,11
199:6	168:14 177:23	160:15 179:8	182:9 184:21
000000.bin.	177:23 186:21	207:20	188:11 189:24
77:15	209:12 213:5	120 98:13,15	191:20 227:5
03-13 227:8	10,757,156 1:13	13 145:4	229:24
1	100 84:25 93:1	206:18	16:11 179:16
1 18:10 23:14	93:2 94:23	130 84:19 86:6	17 174:23
80:20 81:5	1000 2:16	87:2 88:1,25	175:14 178:9
83:9 90:18	1001 10:19	89:2 91:18	186:20 191:20
96:22,25 97:4	19:7 20:22	93:1 94:21	199:15
97:8,11,11,13	21:1,8	139 194:5	18 182:9
127:18,19,21	1002 35:3,12,22	14 121:4 125:3	188:12 189:8,8
127:22,24	36:2,13,20	140 6:14,23	189:11,11
144:8,16,18,20	37:5,12,20	141 194:10	188 149:20
153:16,19,20	38:3 48:10	196:3,3	150:8,9
153:24,24	10036 3:4	14726 227:20	18:17 179:16
154:2,16,19,20	1004 75:19	148 4:10	19 12:1,9
154:21,24	76:1,3 120:21	14:25 108:24	159:24 211:18
192:13 199:7	1018 37:10	15 21:9 22:7	2
206:20	1022 200:21	31:20 120:21	2 10:2 18:12
1.bin 197:25	1026 6:19	122:2,3,21	44:12 45:1
10 5:21,22	1044 13:1 14:9	123:25 125:2	47:5 83:2,3
12:18 26:19	106 148:11	126:25 127:25	90:19 173:18
29:9,22,25	1060 12:4,7,8	129:6 130:4,20	195:7 199:8
30:8 32:12,14	12:10,20	135:17 136:4	2.bin 197:25
32:20,21,22,23	11 22:13 24:12	195:1	20 9:12 24:2,3
	26:19 76:10	151 3:3	45:22 46:12,21
	78:5 136:9		

46:22 47:5 48:2 53:1 54:22 55:13 108:25 178:10 220:22,22 200 1:18 20001-5692 2:7 20004 2:17 202 230:3 202.637.2200 2:18 202.639.7700 2:8 2021 149:11 2024 6:5 2025 1:16 227:5 229:24 230:2 231:3 21 24:3 231:3 212.307.5500 3:5 2141 79:17 80:10 102:21 208:21 2200 4:10 148:3,7,15,20 148:22 229 229:1 23 178:10 188:12 191:12 230 230:1 234 200:4,16 201:11 213:6 217:20 220:2	223:5 24 98:10 184:21 191:12 191:20 203:16 204:23 206:19 220:23 25 9:12,13 23:3 25:19 108:25 108:25 217:1 26 17:22 30:23 33:16 98:10 27 17:10 18:22 21:10,17 24:5 24:13,15 25:23 30:23 214:25 215:8 28 125:1 29 53:21 29-31 51:20 3 3 6:25 24:11 25:11,15 74:12 74:13,18 96:9 120:21 122:2,3 123:7 127:25 129:6 130:4,20 136:4 30 9:13 84:19 86:5 88:1,24 91:18 108:25 177:21 231:16 31 53:21	33 25:15 34 34:19 37:2 37:16 35 38:10 357 149:6 39 58:4,8,14 63:12 68:5 69:19 71:1 95:21 4 4 5:24,24 7:1,5 46:20 48:9 51:20 76:17 199:8,11 40 102:20 109:1 169:17 400 140:16 401 148:11 402 27:9 403 148:11 409 19:17 41 25:3 42nd 3:3 44 169:19 217:5 45 82:2 208:12 455 227:8 456 37:25 38:3 46 84:17 86:3 87:24 88:4,22 91:11,14 48 76:20,23 77:23 78:3,7	78:10 49 86:12,15,22 91:20 93:7 173:17 5 5 4:6 90:19 126:24 179:15 179:20 194:16 195:1,8 199:15 50 173:14 51 82:2 84:3 93:23 127:25 54 75:7 76:8 99:2 132:19 555 2:16 564 6:8 11:1,16 37:10 57 145:3,4 179:15 58 95:19 97:16 97:20 59 75:8 101:22 105:9 119:10 119:21 120:7 5:26 226:25 6 6 18:12 177:22 177:23 179:7 200:19 602 148:11 61 105:24 137:3
--	---	---	--

610 18:12 62 90:18 108:5 109:1 63 80:5,16 81:5 81:22 105:24 106:2,16 108:1 120:9,10 121:7 65 83:9 66 171:18 172:22 67 179:8	26:10 31:19 34:18,25 35:17 36:23 37:7,15 37:21 39:17 75:3 76:3 79:9 83:20 85:18 87:9,15 89:20 90:2,17 95:7 96:22 102:22 120:23,24 127:20 128:1 144:14 150:24 151:10,15 152:11,18 153:9,17 155:1 155:9 180:5,5 192:21 194:5 78 205:5 208:14 79 208:13,20 209:23	163:6 165:8,17 167:18 801 148:11 802 148:12 81 161:11,16 83 149:24 205:5 208:14 84 171:18 172:22 175:7 85 164:16 171:12 87 174:3 180:25 88 171:18 172:22	101:20 153:18 153:18,25 154:9 940 200:24 208:25 217:20 223:7 95 185:25 9:12 1:16
7			a
7 11:19 181:12 186:21 7,166,062 4:13 149:2 7/16/2025 231:5 700 2:6 701 148:11 703 148:11 710 19:9 25:6 72 102:13 209:11 73 102:13 7474828 231:5 76 115:6 157:19 196:2 77 114:14 772 6:8 10:20 11:8 12:16,19 17:14,18 20:15 21:2,8,8,15	151:10,15 152:11,18 153:9,17 155:1 155:9 180:5,5 192:21 194:5 78 205:5 208:14 79 208:13,20 209:23	9 9 32:13,14 76:10 78:5 136:8 213:5 214:1 91 120:24 127:23 128:9 132:1 135:18 911 37:22 917 6:5 12:12 223:13 918 6:5 223:13 919 6:5 12:20 37:6,22 208:23 223:13 92 96:3,13,19 96:24 97:5,9 97:10 98:7	a.m. 1:16 ability 124:23 227:13 able 30:7 54:7 67:20 87:13 123:4 135:7 159:2 212:19 above 81:7 84:5,15 99:10 137:21 138:8 204:11,14 205:18 206:14 207:1 213:10 227:5,14 229:25 231:6 accept 60:17 acceptable 81:18 83:5 90:11 access 40:3 accompanied 190:13 accomplish 139:11

accomplishes 138:20	104:2 108:20 111:3,6,18	172:17 173:20 195:10	agreeing 57:3
accordance 49:13	112:2 114:1 116:12 117:11	additional 53:1 102:16 133:7	ahead 19:5,14
accounting 31:2	119:1 121:1 122:9 123:3	191:18	aid 198:13
accounts 19:24 21:18,22 22:4	135:1,16 136:1 138:8 140:23	address 138:13 160:10 217:11	akin 199:3
accuracy 231:9	140:24,25 147:7 157:2	addressed 163:2 180:9	al 231:4
accurate 227:12 230:1	160:25 161:17 163:8,20	193:2	alleviate 164:12
achieve 48:16 49:22 50:2,7	164:23 165:5,9 165:24 171:6	addresses 10:15	alleviates 126:6 126:25
50:12 52:24 55:16 145:1,8	174:18 175:5 177:9,10	addressing 217:7,22 219:1	allotted 231:19
145:20 175:11	179:24 187:8 191:20 207:22	adjust 118:13	allow 113:2 151:25
achieves 97:21	213:1	adjustable 98:14	alludes 83:21
achieving 89:17	add 46:19 49:18 55:3	adjustment 129:16	alluding 146:17
acknowledge 44:1	111:22,22 112:10 136:6	admit 49:21 55:17 139:20	alternate 146:25
acknowledg... 231:12	168:2	143:21	alternative 147:8
action 227:14 227:18	added 48:7,11 48:18,23,23	admits 142:2	altogether 110:12 164:9
actual 74:23 77:6 108:19	49:4 50:8 52:6 53:1 55:15	admitted 66:25 69:16 146:3	amended 46:14 46:19,22 48:1
117:5,8	102:16 113:2 208:12,16	admittedly 139:15	48:12,22 49:17
actually 6:23 10:4 17:21	adding 52:1 118:13	affixed 75:7	49:18 50:15
22:12 23:6 31:12 33:8	addition 50:4 52:6 159:6	agent 24:16,19 27:9	54:21 55:5,12
41:9 60:17 78:4 79:12,16		agree 18:9 39:18 42:16	amendment 48:12,18 49:8
		44:19 63:14 160:3	amount 19:2,14 23:21 199:1
			analysis 41:6 42:11,13 43:17
			56:7,14 57:7 57:22 97:12,20 105:16,18

106:12 120:23 137:23 153:14 153:20 154:1 154:14,17,18 179:15 180:22 192:16 201:10 201:12,13 202:9,11 203:6 203:7 208:15 analyzing 215:14 andrew 2:5 21:3 andrew.wilson 2:10 annotated 75:16 77:7 96:14,17,18 99:2 102:15 158:2 170:2 208:10 annotation 208:12 209:11 209:11 annotations 100:2 208:17 answer 7:13,15 8:13 13:8,21 13:23 14:1 29:18 53:3,22 54:1 60:13 85:20 86:8 90:14 103:16 114:10 181:4	183:3,10 212:7 222:2,21 224:11,16 225:6,14 226:1 answered 54:12 63:18 124:6 155:5 162:12 answering 197:9 anthony 219:12 219:13 anticipate 135:6 anticipates 123:1 128:13 133:11,18 134:17,21 anticipating 46:4 133:14 anyway 155:7 appeal 1:3 appeals 147:11 appear 49:6,15 105:11 202:14 appearances 2:1 appeared 204:22 230:4 appears 49:17 76:9 80:24 96:14 149:8 207:15	applicable 202:13 231:8 applicant 39:1 39:11 40:7,11 40:19 41:18 42:5 43:20 45:17 48:25 49:17 50:18 51:4,14 52:16 54:14 55:23 56:3 applicant's 53:16,18 54:25 applicants 53:8 54:8 application 73:22 186:6,14 applied 152:14 153:3 172:13 173:15 182:2 214:2 applies 164:5 apply 10:25 162:1 173:12 174:8,16 applying 180:18 190:11 approach 81:23 approaches 23:7 33:8 62:17 63:6,20 63:24	area 66:13 argued 51:14 argues 56:10 139:10 arguing 46:21 48:25 55:1,11 172:4 argument 51:22 53:16 54:13 60:9 103:18 155:18 163:14 215:4,6 216:10 argumentative 162:25 arguments 43:15 55:23 57:25 103:2,8 106:13 114:19 138:19 139:6 142:13 144:5 147:4 155:19 156:11 157:17 157:24 160:11 166:6 173:4 180:13 202:14 204:1 205:14 arose 108:16 112:18 arranged 19:16 216:3 arranging 216:23
---	--	--	--

arrive 22:23 arrow 101:19 arrows 100:6 101:18 art 38:12 40:23 41:7 47:9 51:2 53:7 54:3,6 69:3 73:5 82:10,14 111:1 113:25 114:5 116:10 134:20 138:1 152:24 157:1,11 158:11 163:7 165:22 174:6 181:1 184:23 186:12 ascertain 216:4 ashley 2:14 221:13,15 ashley.finger 2:19 aside 60:12 asked 7:23,23 54:12 63:18 112:14 124:6 155:5,7 162:12 asking 15:15 35:24 36:4,10 36:15,19 41:25 42:1 43:5,23 44:25 54:2 64:6 73:13,18 86:2 88:14	165:11 202:7 aspirational 50:4 52:25 55:15 assertions 219:3 assume 137:22 143:3 146:14 assumes 143:8 146:23 203:19 206:13 assuming 204:19 205:16 209:24 assumption 204:20 attached 37:7 37:13 231:11 attempts 81:6 attorney 8:21 13:13 220:16 220:16 221:10 222:1,19 224:9 227:16 231:13 attorneys 220:19 224:2,3 attributed 154:7 audio 108:11 109:10 110:14 111:22 118:4,7 125:8 126:12 126:21 164:14 164:20 166:25	171:14,24 172:5,9,12,17 172:21,25 173:6,9,20,24 174:8,16 175:11 178:2 181:14 190:17 194:21 195:2,5 195:10,13,17 211:14 212:2 214:4 authentication 148:10 automatic 47:11 107:8 120:15 129:5 129:14,15 automatically 45:23 46:11,20 46:23 47:3,19 47:25 48:7 49:5,19 52:2 54:19 55:3 available 19:3 19:15 40:3 192:20 193:4 231:6 average 23:15 30:9 32:14,22 33:14 averaged 23:20 averages 23:17 33:13 34:1	averaging 19:23 23:6 30:17,18 34:4 avoid 106:23 107:7 108:1 110:9,11 113:8 113:9 120:14 123:4,8 124:25 131:1,6 133:17 135:3,7,14 136:13,14 137:1 214:14 avoided 108:8 117:24 122:11 122:25 124:9 126:18 128:12 129:8 130:22 133:10 134:15 135:25 164:8 164:10 avoids 123:2 127:3 128:14 129:24 131:10 133:12 134:17 134:21 aylo 218:16 223:6 224:3,4
b			
b 4:8 138:15 204:14 213:25 b2 1:13 back 17:21 23:7 24:25			

29:6 30:7	204:1 206:7	71:24 76:13	101:8,16,18
32:21 41:15	209:9	79:12 80:14	173:13,16
50:17 57:23	bases 190:1	86:11 96:8	board 1:3 8:16
76:15 93:24	basically 23:2,4	105:15 139:19	64:23 124:25
97:11,15 98:2	23:17 60:25	140:6 145:25	130:10,18
105:8 106:8,11	63:4 125:22	152:21 168:11	147:11 167:3
117:8,22 119:4	198:4	177:10 180:9	218:10,17
127:21 137:6	basis 225:7	194:6 200:18	226:8
137:23 142:20	bates 75:7	201:12 202:3	board's 65:5
143:4 151:23	beginning 71:1	203:7 207:10	body 16:12,21
154:19 159:13	77:24 100:19	208:23 215:15	bold 50:11 52:7
167:6 171:11	137:9 160:19	believes 168:8	bolded 48:13
187:9,23,24	begins 6:23,25	benefits 185:19	48:19 55:18,18
193:4 201:2	12:6 19:10	best 203:3,5	boston 1:19
210:9 224:22	25:6 81:9	227:12	bottom 6:19
224:25 226:9	82:24 88:9	big 88:18	62:7 80:20
background	95:17 122:2	bigger 88:25	90:18 95:21
72:18 73:4	123:7 144:25	92:16 94:12	109:1 121:4
193:3	149:24 153:17	bin 197:24	128:2 132:7
backwards	159:25 189:5	binder 5:16	169:5 173:17
67:14 72:6	211:22 214:23	200:19	177:22 179:16
143:22	216:25	bit 32:2 58:3	207:20 215:23
baker 2:3	behalf 223:11	113:15 117:7	botts 2:3
bakerbotts.com	behavior	123:19 126:1	boundaries
2:9,10	107:18	135:23	39:2,3,8,9 40:8
bandwidth	behavioral	bitrate 161:22	40:9 41:22,22
112:11 168:3	19:24 20:9	162:2,15,17	43:9,9 207:24
bar 161:20	21:11,19,22	171:9	boundary
based 18:24	22:5,8 31:2,21	bits 110:4,6	40:25 117:12
19:1,23 28:25	believe 6:25	111:12,13	117:18
55:10,11 65:14	35:16 37:6,23	113:13	box 159:18
83:7 148:10	43:15 45:5	block 25:3	break 29:13
184:3 185:8	50:15 57:7	34:21 38:2,7	34:14 74:8
198:12,19	59:5 68:23	38:11 99:22	119:2,7 156:14

193:18 200:8 224:14 226:14 226:16 bridges 187:1 188:17,19 bridging 186:25 187:15 189:20,21 190:4 brief 32:18 british 219:7 broader 180:3 buffer 69:6 87:5 89:5 91:5 91:23 92:7,15 92:21 93:12 95:1 100:16 102:1,6,8,23 104:7,8,8,12,14 104:19 105:9 105:11,19 106:4,18 107:5 107:12 109:18 109:21 110:17 111:2,4,18,19 111:23 112:7 112:15,20,22 112:23,24 113:3,21,22 114:1,3,7,8,15 114:19,22 115:1,5,7,11,17 115:19 116:2,5 116:7,12,13,17	116:18,23 117:21 118:2,3 118:6,8,12,14 119:24 120:2 120:18 121:13 121:18,19,21 123:18,21 125:14,17,18 125:18 126:17 127:2,14 128:16,18 129:20 131:5 132:16,25 133:1,3,5,15 134:23,25 135:15,22 136:14,21,23 157:2,3,10,18 157:22,25 158:5,8,13 159:2,8,13,16 160:5,23 162:10 163:8,9 163:15,20,21 163:22 164:11 165:1,9,12,17 165:23 166:2,6 166:10,19 167:6,11,14,24 168:8,20 169:1 169:7,12,22,24 170:3,4,10,19 170:20,25 171:3,4,4	203:19,24 204:2,3,5,17,19 204:24,25 205:1,7,9,12,13 205:17,22,25 206:4,11,13 207:3,4 208:5 208:11,17 209:3,5,7,13,18 209:25 210:1,8 210:8,11,18,20 211:4,5,6 212:3,22,23 213:12 214:20 buffer's 133:21 buffered 84:8 94:1,17 bufferfullness 132:23 134:4 buffering 59:19 59:23 68:2,3,7 68:9,12,14,17 69:3 70:7 71:20 building 223:21 built 60:13 bunch 33:13 96:16 burst 27:7 28:6 33:7 bursting 27:23 28:16 29:10	c c 5:1 97:11 127:21 137:9 138:16 153:19 153:24 154:19 227:1,1 calculated 19:22 25:19 31:17 call 8:15 26:13 29:9 called 226:9 calling 126:5 calls 65:4 67:23 70:18 71:14 145:10 184:16 225:4 capable 109:6 118:9 125:4 capital 22:14 capitalizing 171:3 captioned 227:5 capture 136:9 capturing 23:19 33:11 card 107:1,19 109:13,21,24 110:6,10,13,16 110:22,23 111:6,15 112:19,24
--	--	--	--

113:1,11,15	28:1 31:14	93:4 107:8	143:25 176:23
116:8,15,19,24	60:14 84:13	120:15 123:2	177:9 201:8
117:3,6,11,18	88:18 89:9	128:15 134:18	204:10
117:22 118:1,4	101:14 115:22	147:24 151:4	certified 227:3
118:9,13 121:5	116:15 117:17	202:10 218:16	certify 227:3
121:20 122:15	121:11 139:19	220:7,10	challenged
123:13 125:11	142:21 146:1	catches 81:14	57:19 80:15
126:3 127:1,15	146:18 147:18	83:13 85:9	81:24 82:5,9
128:25 129:11	147:18,22	90:7 95:11	177:11 191:15
129:21,23	149:16,18	categories	chance 7:9
130:13 131:2,6	150:20,23	141:7	201:4
135:21,22	151:11,15	category 15:13	change 23:21
159:2,11	152:10 160:22	16:4	45:10,18 46:9
163:25 164:4	162:6 163:17	cause 94:22,23	47:3 52:10,21
164:14 166:24	166:16,18	150:3 210:25	54:16 108:14
167:9 170:8,13	172:11 175:18	211:12,13	109:8 110:10
170:24 210:12	176:3,16	caused 31:11	111:6,21 125:6
210:13 211:10	178:13 181:20	72:5 129:10,22	126:11,20
211:19,20	181:21 182:1,1	causes 109:9	131:2 134:1
212:2,5,7,12,19	182:6,14,20	125:7 126:12	161:21 162:1
213:2 214:21	185:20 187:14	168:9	162:15 166:20
card's 211:3	188:23 189:2,4	causing 30:19	166:22 171:9
cards 108:13	190:8 191:3,9	caution 220:15	180:17 181:8
108:17,18	192:5 199:2,9	221:25 222:18	187:21 201:6
109:5 110:24	201:22 207:21	224:8	212:17,19,25
125:4 126:8,9	208:5 209:25	certain 57:13	213:2 228:5
126:10,19	217:13 218:3	105:5	changed 131:4
164:6 166:24	218:19 219:8	certainly 47:22	164:1,5
168:6 170:7	219:11,14,18	48:7 50:7,14	changes 9:6
210:15 212:17	219:21 220:1,2	54:18 56:3	150:15 162:17
213:1,18,21,22	220:10 224:2,4	66:24 69:14	174:7,9,14,15
carries 149:24	cases 14:17	72:1 89:1,18	174:19 181:3,4
case 6:5 14:22	57:22 62:10	107:21 113:4	229:25 231:10
15:6 16:9 17:4	67:11 76:2	113:17 138:10	

changing 47:1 52:4 108:19 110:13 117:13 160:13 166:25 channel 125:24 channels 109:24 111:12 125:25 characteristic 33:21 150:13 150:16 characteristics 19:25 20:10 21:12,19,22 22:5,8 31:3,21 31:23 150:16 characterizati... 173:22 characterized 70:2 checking 92:6 checks 91:22 92:14,20 216:3 christoper 3:9 circuitry 108:19,21 117:5 126:22 164:1 circumstances 95:16 citation 9:10,11 9:16,19 11:3 35:20 38:7 130:14 131:13	177:22 179:13 180:4 194:17 citations 10:18 10:25 17:18 35:10 37:5 68:20,25 69:13 71:21 117:8 172:3,4,8,20 173:4 cite 19:7 24:12 25:1 26:3 47:25 80:16 96:3 105:2 107:3 108:8,14 120:22 121:6 122:21 129:3 130:2,2,4 135:17 140:6 173:24 179:7 179:15 194:16 cited 11:15,24 16:12,16,21 17:1 21:10 25:3 38:1 43:2 48:21 50:18 54:21 56:11,13 66:22 67:8 68:3,4,23 72:3 96:13 108:24 109:15 130:19 131:11,15,22 135:17 136:3 139:15 146:3 172:14 178:19	181:10 186:19 190:22 191:15 194:25 196:14 205:5 cites 98:8 citing 11:8 35:8 35:14,16 41:15 47:21 48:11 51:10,12 78:9 78:10 92:9 97:19 98:8 120:20 129:14 171:17 180:17 claim 42:14,15 45:22 46:12,14 46:21,22 47:5 48:2,12,22 49:9 50:8,13 50:14 53:1 54:21,22 55:5 55:13 87:21 96:22 127:19 127:19 138:11 140:25 142:22 143:11,13 144:8,16,18,20 145:7,19 151:10 152:1 152:23 153:24 154:15,16 179:15,20 192:8,13 194:4 194:5	claiming 85:11 141:20 143:17 claims 39:19,25 42:11 47:12 51:5 53:10 54:9 57:19 139:7,7,25 141:21 142:2 143:6,18 145:16,18 153:6 155:20 162:16 191:15 215:6 clarendon 1:18 clarification 161:14 clarifies 105:22 clarify 35:22 36:4 37:4 76:1 161:17 clause 21:18 clear 25:8 43:6 50:19 69:2,18 77:5,11 102:1 102:5,8,23 104:7,12,14,19 105:9,11,19 110:17 112:15 112:19,21 113:21 114:15 114:22 115:4 115:11,17,19 115:25 116:1,4 116:22,23
--	---	---	--

117:12 118:6 119:24 120:2 121:17 127:2 157:10,18,22 157:25 158:4,8 158:20 159:16 160:5,21,23 162:10 163:15 168:7,20 169:1 169:7,12,22,24 170:2,3,19,20 171:3,4 204:24 209:18,24 210:11 211:5,6 212:3 214:20 cleared 112:25 204:3 208:6,11 208:17 209:4 209:14,17 clearing 106:4 106:18 107:12 111:2,18 114:1 114:6,7,19 115:7 116:7,11 116:18 117:21 118:12 120:18 121:13 157:2 163:8,19,21,22 165:1,8,12,16 165:23 166:2,6 166:10,19 167:11,14 203:19,23 204:16,19	205:12,17,25 206:11,13 207:2,13,15 210:8,17 clearly 155:23 172:12 173:9 clears 104:7 client 8:21 13:13 220:16 clients 222:25 223:1,25 clocks 108:18 closed 47:19 closely 27:1 closer 32:24 clustered 28:13 coded 175:19 176:1,2,9 178:12,13 182:11,16 183:21,22,24 185:3,8,22 187:12,25 188:15,25 191:2,7 coding 176:15 184:17,20,23 185:1,18 collected 150:13 collectively 16:25 colon 99:3	color 102:17 column 9:12 21:7 22:7 23:3 24:3,11,25 25:11,15 26:19 31:18,20 80:20 81:5 83:2,9 90:18,19 98:10 99:10 126:24 132:1 145:4 179:7 195:1,7 combination 19:2,13 24:22 combine 81:6 come 21:14 186:20 comes 38:2 182:8 205:6 coming 35:20 187:24 commands 99:11 168:19 commission 230:8 commonwealth 227:9,10 communicating 72:10 communicati... 8:21 13:13 220:17 222:1 222:19 224:9 compared 33:10	compares 92:15 comparing 19:10 25:6,9 26:5 91:21 comparison 85:16 complete 16:7 61:8 81:17 83:5 90:10 completed 29:18,19 231:16 completely 58:17,21 59:1 59:11 60:1,7 60:15 61:15,22 63:1,11,15,23 64:8 65:1,10 65:19 70:13 81:13 83:12 85:8 90:6 95:11 128:17 132:17,25 133:3,15,21 138:23 140:4 141:16,22 142:5,10,14 144:4 146:11 152:12 complex 175:24 compression 175:22 176:15
--	--	--	---

concede 56:15 56:22 conceded 56:19 57:15 concepts 174:9 conclude 38:11 40:24 47:10 51:3 53:6 54:7 64:25 115:6 concluded 70:14 concludes 166:9 conclusion 145:10 218:10 218:18 condition 49:3 93:11 99:19,21 99:23 100:9 101:19 133:15 133:16 134:21 134:24 conditions 19:6 81:16 83:4 87:14 89:12 90:9 101:13 configured 24:17 confirm 61:7 61:13,17,18 62:24 63:9 64:6 65:18 66:3,6 70:12	confirmed 59:10 63:8 confirming 63:3,22 confirms 60:6 61:6,12,19,23 conflicting 141:23 confronted 187:24 connection 18:3,12,17 31:1 33:18,22 75:2 110:15 112:14 192:11 200:4 202:10 219:7,11,14,17 219:21 220:4,7 221:11 222:13 consider 14:20 15:3,16,23 16:20 39:20 41:11 147:6 175:8 182:19 182:25 214:11 218:19 consideration 182:18 considerations 217:1,8,23 218:8,13 219:4 considered 15:9 16:4,6,8 16:18 17:3	44:14 140:18 176:6,19 177:6 218:6,21 considers 39:24 consistent 201:12,21 construed 153:4 contain 176:12 198:25 contains 64:19 175:21 182:12 182:21 191:5 contemplates 215:21 contend 59:13 60:2 61:3,11 contending 65:21 70:8 104:4 contends 59:21 65:25 103:3 104:22 content 11:8,10 204:1 206:7 209:9 210:9 contention 104:11 contents 7:3,18 7:21 160:6 162:10 204:25 205:4,22 217:19,22	context 38:21 39:25 108:16 114:21 121:9 147:22 150:22 152:25 160:4 160:10 161:3,3 161:5,18 162:9 163:24 166:20 168:5 171:7,9 179:20 199:14 contiguously 19:3,15 contingency 60:12 continually 66:8 continue 121:18 continues 109:17 112:2 118:20 170:15 208:1 continuing 93:9 113:22 114:25 158:16 158:22 167:15 continuous 38:14,23 39:5 39:11,12 40:12 40:13,21 41:3 41:20,20 42:7 42:10 43:22,22 46:5 47:13 48:16 49:22
---	--	--	---

50:3,12,20,21	continuously	copying 113:12	165:18 172:25
50:23 52:24	49:11 107:1,19	125:24	184:9,14
55:16 56:1,1,4	109:14 118:7	corner 38:5	189:10 194:8
58:17 59:1,10	121:5,20	169:20	194:21 200:22
59:14,21,25	123:13 125:12	correct 6:8,15	215:17
60:3,6,14 61:4	controller	7:1 9:8 10:6,20	correction
61:8,10,14,21	24:16,20 27:9	11:11,20 12:24	228:5
62:25 63:10,15	conventional	14:2 16:18	corrections
63:22 64:7	108:13,17	17:4,14 23:25	229:25
65:1,10,18,22	109:5 125:4	25:25 26:14	correctly 59:4
66:1,3,7 70:9	conversation	30:14 33:22	94:10 150:4,10
70:12 78:12,14	220:6	35:11 38:15	157:6 207:10
89:17 97:21	conversions	39:20 42:21	208:24
103:4 104:5	123:19,20	44:21 48:20	correspond 6:7
118:11 127:18	convert 126:2	50:13 53:11	corresponds
137:16 138:12	converted	56:16 63:16	26:13
138:14,14,20	125:23	64:18 68:10	counsel 2:11,21
138:22 139:1,9	converting	69:6,10,22	3:7,10 29:11
139:9,11,12	105:5 111:11	74:17,23 75:3	32:1 35:6
140:1,2,3,14,15	126:16	75:16 76:11	64:10 71:15
140:19,19	convey 172:16	78:16 82:24	75:21 97:23
141:4,5,9,15,21	173:19 195:9	88:2,9 91:6,25	119:16 124:16
142:4,10,14	195:16	92:5,11,13,16	130:11 131:20
143:19 144:2,3	conveying	94:13 96:15,23	148:4,13
145:1,8,20	172:13	103:22 105:12	162:25 219:23
146:7,10,20	copies 39:3,9	115:23 116:1	223:6 227:13
147:12 150:1	40:9 41:22	119:19 122:8	227:16 231:14
150:17 151:3	43:10 214:15	123:9 124:4	counsel's 138:5
151:12,17	231:14	130:5 134:2,5	couple 93:16
152:2,2,11,15	copy 21:4	134:13 137:6	157:19 179:1
153:11,16,21	53:20 75:22	138:3 140:9	214:11
154:3,7 155:2	96:1 144:10	142:20 145:2	coupled 134:18
155:10 175:11	148:14 208:22	148:20 149:2	135:19 138:21
210:6		157:5 163:11	

course 190:13	d	date 72:11	107:17,23
court 144:9	d 2:4 4:1 5:1	dated 149:10	111:9 113:6,18
148:2	127:22,24	day 230:3	114:12 119:11
covering	153:20,24	days 231:16	119:15,18
189:25	154:20	dc 2:7	120:25 121:9
covers 10:4,10	d.c. 2:17	dealing 215:4	121:16 122:20
10:11	data 45:19 46:6	dec 111:8	127:7 128:1
create 106:24	46:10 47:24	decide 130:19	130:12 131:13
creating 31:4	48:6 49:2,8,25	decision 217:7	132:1,19
criteria 129:5	51:17,18,24,25	217:12 218:8	136:20 137:4,7
135:2	52:5,11,12,22	219:1	147:7 148:24
criterion 123:1	54:17,25 69:6	decisions	149:14,21
128:13 133:11	84:8 94:1,17	101:12	152:16,18,19
134:2,4,16	107:9 109:19	declaration	153:9,14,17
criticized	109:19 112:10	4:10 6:4 10:3	154:9 155:1,9
155:21	115:12 116:17	10:10,13,16,19	155:14,15
crr 1:22 227:21	117:15,15,20	11:9,24 13:5	156:2,6,8,12,19
cs 231:15	117:23 118:2,3	15:20,23 17:11	159:5 161:7
cs7474828 1:23	118:8,14	20:11 34:17,18	163:2 165:5
228:25 229:23	120:16 121:19	41:14 57:21,23	169:17 171:12
230:11	121:21 123:17	57:24 58:4,5	171:19 176:21
current 19:5,14	125:14,15,19	61:1 64:13,14	177:2 180:5,6
19:17 77:14	127:11,13	64:17,19,20	180:9,25
78:1 93:17	129:5,15 131:4	66:14 70:21,23	185:25 190:10
98:11,16	135:21 149:25	73:5,24 74:4	190:23 192:7
128:19 133:6	150:13,14	74:15 75:2	192:17 194:4
150:23 180:4	151:3 159:8,12	76:8,16 77:17	195:20,24
currently 118:4	168:2 170:10	80:6 82:1	200:4,17
216:17	170:25 181:25	85:21 93:25	201:11,14
cursor 161:19	185:2,8,11	95:20 96:3,7	202:13,21,25
cv 74:21	188:1 191:8	97:1,16 100:3	203:3,11 206:1
	199:1 205:13	101:22 102:13	213:6 215:1
	210:16 211:2,4	102:21 105:2	217:12,20
		106:7,12	218:2,22

declarations 16:5,7 17:2 57:20 62:23 65:15 66:5 70:10 72:19,24 73:2 83:18 108:7 138:13 139:18 149:15 177:8 222:14 222:16 223:10	delays 59:19,22 60:5 65:24 67:1 68:1 69:14 70:6 71:20 139:21 delete 134:1 204:25 deleting 207:5 210:21 delivering 175:12 delivery 173:15 174:24 175:15 190:12 214:3 delta 22:9,15 25:21 26:13,13 26:15 27:4,4,7 30:13 32:4 deltas 23:4,21 28:8 30:8 deny 64:6 depend 18:2,11 18:16 33:17 183:25 depended 43:3 189:19 depending 30:25 43:13 81:16 83:3 90:9 151:1 depicted 77:18 deponent 11:21 14:13 16:1 17:15 18:6,18	21:24 24:9 42:23 44:23 45:3 46:17 47:15 51:8 58:12 62:2 77:3 79:4 80:12 83:24 91:12 98:5 100:11 105:20 110:19 114:16 120:4 124:20 132:14 134:9 156:15 157:14 169:14 171:25 177:15,19 179:11 186:16 189:13 193:23 194:23 197:1 197:12,19 201:25 204:12 206:21 208:7 216:14 217:16 221:22 223:8 225:1 230:2 231:13 deponents 151:22 deposed 139:18 deposes 5:4 deposing 231:13 deposition 1:15 7:9 8:23 36:8 66:25 68:4	69:17 72:8 147:3 220:13 223:16 225:10 227:4 229:24 depositions 72:3 derived 19:25 derives 209:17 210:12 describe 18:9 28:15 78:19 84:4,15 100:18 100:25 117:9 124:14 125:21 186:5 220:12 described 47:4 84:2,5 85:13 85:18 87:8 89:19 90:24 95:4,23 112:16 121:2 124:24 128:6 129:23 130:7,24 131:7 135:13 137:21 178:25 186:13 186:19 215:5 describes 18:23 20:7 81:3 90:3 107:4 108:11 131:10 136:2 describing 17:13,17 38:13 41:10 77:24 82:3,19 83:16
---	---	---	---

83:17 85:3,4 85:17 86:16,21 87:18 92:20 93:7 95:3 98:19 101:20 120:8,10 146:24 150:18 181:8 187:21 description 40:15,24 78:3 92:3 100:24 195:12 descriptions 195:7 design 67:12 72:5 143:24 designated 44:12 200:21 desirable 207:23 desired 98:14 161:19 despite 70:7 139:25 detail 95:24 172:15 178:20 179:1,10 190:24 191:19 191:21 details 149:17 deteriorates 46:6 49:25 51:18 52:13	determination 18:2,10,25 19:8 25:5 30:25 33:16 128:16 131:17 132:5,11,22,24 133:2,20 136:20 determinations 26:5 determine 201:5 202:11 determined 18:24 19:12 96:2 determines 24:20 195:2 determining 20:4 device 87:7 108:19 198:18 diagram 170:1 diamond 101:12 dichotomy 30:24 31:5 difference 28:4 differences 30:18 different 6:24 10:4 11:4 24:8 30:13 36:3 37:8,19 42:2 43:10,10 57:12	59:23 67:6 85:21 89:21,22 101:14 109:7 111:23 113:14 117:1 118:14 125:5 129:1 134:20 147:23 147:24,24 150:20,20,21 150:22,22 159:12 161:3,4 164:2 165:2 166:3 167:6 173:10 199:4 211:12 218:10 218:18 222:14 222:25 223:25 differs 178:1 181:13 190:17 199:21 214:4 difficult 51:11 53:4,14 direct 95:18 directed 46:3 162:16 224:15 directly 18:2,11 18:16 19:5 21:14 30:25 33:17 163:2 disagree 56:14 87:21 103:14 104:10 137:15 141:8 155:24 166:13	discard 160:5 162:10 discarded 112:5 118:25 216:6 discarding 111:4,19 114:8 115:12 116:13 157:4 158:14 163:9,22 disclose 57:18 140:24 153:21 disclosed 106:3 106:17 107:11 120:17 121:12 135:11 discloses 42:14 47:23 48:5 49:1 51:13,15 84:18 86:4 89:16 105:3 108:7 117:3 137:10 154:16 191:15 disclosing 45:9 55:12 85:12 86:25 88:23 93:5 94:20 110:9 disclosure 192:14 disclosures 104:18 118:19
---	---	---	--

discontinuities 204:2 206:7 209:5 discontinuity 209:9 discuss 38:11 130:13 161:8 204:10,15 206:14 226:16 discussed 82:4 113:7 172:15 205:18 222:16 discusses 107:22 130:20 153:15 discussing 15:19 88:14 111:10 121:8 122:19 123:8 138:21 153:15 162:6 173:6 178:24 187:5 discussion 8:5 8:17 14:5 38:13 43:2 44:4 78:11 79:10 96:22,25 100:22,22 106:6,7 107:15 107:17 146:5 153:23 154:20 157:21 166:22 172:12 195:20 197:7	dish 1:9 2:11 3:10,12 218:16 231:4 disparaged 81:23 85:13 displayed 161:20 disruption 62:11 150:3 disruptions 62:13,18,20 63:7,20 distinguished 213:22 distinguishing 47:12 divided 23:15 dividing 23:5 document 6:1 6:15 7:10,16 7:23,24 8:22 9:2,8 11:22 14:11,12,14 16:2,3,16 17:16 18:7,19 20:23 21:25 24:10 35:19 36:13 37:1,18 42:24 44:8,24 45:4 46:18 47:16 48:10 51:9 58:13 62:3 74:14,23 75:25 77:4	79:5 80:13 83:25 91:13 98:6 100:12 105:21 110:20 114:17 120:5 124:21 132:15 134:10 148:22 157:15 169:15 172:1 177:16 177:20 179:12 186:17 189:14 194:24 197:2 197:13,20 201:2,5,22 202:1 204:13 206:22 208:8 216:15 217:17 223:9 225:2 230:5 documents 11:20,24 12:4 13:4,11 14:15 16:8,12,25 17:1,6 40:3 67:2,3,4 68:15 80:1 218:23 220:18 doing 23:2,19 26:12 34:5 87:16 91:4 110:11 123:16 126:25 127:10 154:17 187:6	dominated 34:8 double 103:24 download 79:11 81:8,9 81:23 82:4,11 82:18 84:5 85:13 87:11,16 87:19 89:16,19 91:22 95:3 downloaded 81:11,13 83:10 83:13 84:8,12 85:6,8 90:4,7 95:6,9,11 207:5 210:22 downloads 81:4 82:8,19 downshifting 18:1,10,23 downward 120:16 129:15 downwards 107:7,9 120:14 127:12 129:6 dr 4:10 10:15 34:19 35:8,15 43:15 56:10,13 57:25 59:9 60:18,25 62:22 66:10,21 67:8 69:24 78:20 79:8,14,17,24 80:6 81:2,21
---	--	--	---

85:11 87:20,21 89:12 93:25 102:12,21 103:2,14,21 104:3,3,11,21 105:15 106:13 114:18 115:3 115:10,22 116:18,23 130:12 137:15 139:20 141:9 141:14 143:16 144:17 147:3 148:25 155:21 155:24 156:3,6 156:11 157:17 157:23 158:9 159:16 160:8,9 160:11 163:14 164:19 166:5,9 168:8 169:17 169:23 170:2 171:13,18,22 171:23 172:3 172:19 173:23 174:21 175:3,8 176:10,24 180:12 197:10 200:17 202:7 203:25 204:8 204:21 205:3,4 205:11,14 206:1,6,12 208:9,11,15,21	209:3,16,16,21 210:23 217:6 218:25 drained 134:25 duly 5:4 duration 27:1 29:4 30:4 84:9 84:14,24 94:2 94:17 161:21 199:11,11,21 199:22	early 108:17 110:24 edell 3:12 effectively 40:16 123:16 effects 33:11 efficient 185:15 either 16:5 79:19 84:4 95:3 element 42:14 42:15 96:22 127:19 141:1 144:24 153:15 154:2,15,16,21 154:24 elements 97:11 153:24 eleventh 2:16 eliminate 69:1 164:12 eliminates 124:3 eliot 2:4 eliot.williams 2:9 embodiment 19:11 24:2,16 26:1 27:10 31:9 34:9 43:24 embodiments 56:8,11,15 57:1,4,16,17	173:9 emphasis 48:22 48:23 52:6 55:18,20 emphasizing 47:11 employ 123:1 128:13 133:11 134:16 employed 227:14,16 employee 227:15 employees 139:19 143:20 147:2 219:6 emptied 133:16 empty 128:17 132:17,25 133:3,21 136:15 209:5 enable 198:17 encoded 184:3 187:8 189:19 encoder 185:10 185:13 193:6,7 193:14 encoders 192:20,24,25 193:1,4 encoding 185:9 185:10,15 188:18 193:9 195:2,5,13
	e		
	e 4:1,8 5:1,1 96:22,25 97:4 97:8,11,13 127:18,19 153:16 154:2 154:16,21,24 227:1,1 e.g. 51:18 98:13 178:3 190:18 earlier 56:6 77:7 96:8 109:3,16 113:7 113:16 137:23 137:24 138:7 139:16 146:5,5 163:13 191:8 195:6 202:12 204:9 206:9 208:4 213:9 216:22		

ended 112:4 118:22 158:18 158:24 167:17 167:20 170:17 208:2 ends 12:4,8 58:16 engaged 223:2 ensures 150:15 entire 17:2 67:21 84:6 87:12 143:4 entitled 74:14 137:10 148:24 217:1 envisaged 107:2,20 109:15 121:6 123:14 125:13 episodes 151:14,20,25 equal 101:4 equally 10:25 equals 132:23 133:1 134:4,24 168:20 equation 23:2,3 34:1 equivalent 11:10 137:16 141:10 146:21 147:12 errata 228:3 231:11,13,16	erratas 231:15 error 67:12 errors 214:15 especially 72:4 118:18 191:19 214:12 esq 2:4,5,14,15 3:2,9,11,13 231:1 essential 160:25 161:2 161:17 171:6 207:23 establish 69:9 establishing 61:19 et 231:4 evaluated 101:15 everything's 117:25 evidence 61:23 104:7,14 138:2 141:7 143:8 146:16,23 151:1 218:3,7 218:13 227:7 230:5 exact 89:13 121:10 127:8 127:24 175:14 exactly 41:8 43:20 62:12 64:1 70:22	71:18 124:13 141:1 177:6 examination 4:6 5:7 example 26:2 29:21 40:18 42:6,7,12 50:19,23 52:12 52:17,18,20 54:14 55:13,24 56:3 62:6,14 71:20 92:25 93:20 98:9 107:15 111:24 136:9 140:17 172:15 174:22 175:25 178:11 191:17 199:11 204:14 209:19 214:5 examples 47:2 174:8,16 181:17 exceed 87:6 exceeded 91:5 exceeds 98:11 except 229:24 excerpt 40:2 76:12 77:18,21 99:2,9 102:15 158:2 209:12 excerpted 170:1	excerpts 53:17 70:4 exclude 49:16 53:9 exclusive 173:5 exclusively 173:6 executive 227:8 exhibit 4:10 6:19 10:19 12:4,10,17,20 12:22 13:1 14:9 19:7 20:22 21:1,8 35:3,11,22 36:3,13,20 37:5,8,10,12,13 37:14,19,20 38:3 48:10 75:19 76:1 79:17 80:10 102:21 120:21 144:12 148:3,5 148:10,14,15 148:20,22 169:19 200:5 200:21 208:21 exhibits 13:18 existing 108:11 exists 101:4 expect 28:7,12 29:6 32:8,23 202:4,22
---	---	--	--

expected 110:6	63:24 106:25	factor 18:24	file 34:24 35:4
experience 17:8	128:10 214:13	19:21 20:4	35:16 36:16,17
45:12,20 46:4	215:24	24:6,14,18	36:22 37:11
49:3,24 51:17	explanation	25:16,22,24	39:20 42:17
52:8,19 54:15	133:7	26:3 28:25	44:15 47:10
55:2,14,20	explicitly 42:18	31:10,11 32:25	51:3 53:7 54:5
60:4 72:13,13	express 55:24	34:10 132:13	54:6 77:14
146:9	104:18 118:19	factors 19:2,13	78:1 81:9,11
experienced	expressly 84:16	24:22 25:13	81:12 83:10,12
59:18 65:24	86:25 93:5	31:17 128:18	84:6,7,11,14,18
68:1 70:6 71:8	94:19 110:8	133:5 136:23	84:23,24 85:6
71:19	113:8 123:23	facts 143:8	85:8,22 86:5
experiences	128:4 133:19	146:23 147:23	87:1,4,12,12,25
59:22 146:2	135:16 136:25	150:20	88:6,13,18,23
151:13,20,21	153:3 171:5	fails 175:8,9	89:2,4,6,10,24
expert 143:20	174:19 176:7	231:18	89:25 90:1,4,6
145:25	181:23 182:19	fair 16:24	91:17,24 92:21
expertise 17:7	182:25 185:19	family 14:21	92:23,24 93:6
experts 152:9	189:6,24	15:5	93:17 94:4,11
expires 230:8	191:11 207:21	fast 33:9 34:8	94:20,25 95:5
explain 18:21	extensively	187:7,7,23	95:6,8,10,16
31:6 95:22	218:6	faster 30:6	112:1,3 118:20
107:25 108:6	extent 7:17,20	216:1	118:22 140:8
181:7 190:24	11:2 13:12	faults 217:6	140:13,16
211:17,23	16:11 113:14	218:25	146:15 150:22
213:5,25	202:14 222:2	fcrr 1:22	158:17,23
explained	222:21 224:11	227:21	167:17 170:17
43:14 179:10	extra 103:25	features 192:13	174:25 175:16
207:1 213:10	f	fed 109:23	175:21 176:3
213:17	f 227:1	feed 109:23	176:12,16
explaining 20:2	fact 31:1 47:22	110:2	177:13 178:2,3
77:10	61:19,20 103:4	figure 18:12	178:5,13,17,20
explains 19:21	210:12	60:11,20	178:25 181:14
62:17 63:5,19		169:16 195:7	181:15,20,21

182:3,12,21	194:21 195:16	56:17 57:6	163:12 165:3
187:8,10,19,25	198:5,6,14,25	58:6,20 59:3	169:3 173:1
188:4,8,14,16	199:10,24	60:22 62:1	174:17 180:20
189:5,17 190:2	205:7 207:3,6	63:17 64:9	184:18 186:15
190:18,18,21	209:25 210:7	65:3,12 67:22	192:6,15,22
191:4,9 193:8	210:20,22	68:11 69:7,11	193:10,20
193:9 194:12	214:8,12 216:2	69:23 70:17	194:13,22
195:2,3 198:4	216:11,23	71:13 72:15	196:12,15,25
198:8,10,21	financially	73:7,17 74:2,9	197:18 199:19
199:17,18,22	227:17	77:2 78:2,17	221:15 226:13
199:24 200:1	find 36:7,9,18	79:3 82:25	226:21
204:3 207:23	57:3 71:9 74:5	83:22 86:19	finish 197:10
207:25 208:2	80:17 154:9	88:10,21 91:7	finishing 57:9
211:14,22	200:16	92:17 94:14	first 10:12 25:2
214:5,5,8,13,23	fine 8:11 9:18	97:6,23 98:4	41:2 47:25
216:4,6,18,20	29:15 149:19	100:10 102:3	49:20 53:15
216:21,22,22	226:8	110:18 115:2	54:20 58:16
filenames	finger 2:14	116:3 119:4,15	77:8,12 78:6
197:23 198:2	7:11,17 8:1,9	120:3 123:10	87:1,4 89:3
198:20	8:14 9:3 11:12	124:5,16 129:2	108:10 112:1
files 72:11 87:1	13:6,12,20	130:16 131:19	118:19 128:15
88:8 111:3,19	14:2,23 15:7	132:20 134:6	131:16 132:5
111:22 112:5,7	15:18,25 16:10	134:11 138:4	132:10 133:20
112:22 114:2,7	16:19 17:5	139:3 140:10	134:1 135:12
115:1 116:13	18:4 20:14	141:11,13	136:19 137:14
118:24 157:3	29:11 30:2,15	142:23 143:7	156:25 159:18
158:13 163:9	31:7,25 33:23	144:12,21	164:18 166:17
163:21 165:24	35:5,9,21 36:2	145:9 146:22	167:12 168:25
167:24 178:6	36:10,14,19	147:14 148:4,8	168:25 169:6
178:24 181:17	38:16 39:21	150:5,9 151:6	170:22 183:8
187:15 189:20	41:5 42:22	153:12 154:11	186:18 187:3
189:21 190:5	44:22 47:14	155:4,12	188:3,21 193:8
190:21,25,25	48:15 51:7	157:13 160:7	193:8,14 199:6
191:17,22	53:12 54:11	162:11,24	207:25 215:11

five 156:14 193:21,24 221:18	fluctuates 32:3	82:25 83:22	217:15 219:10
fixed 33:2 108:18	focus 120:6 121:15	86:19 88:10,21	219:16,22
flip 74:4	focusing 61:16 180:15	91:7 92:17	220:8,14
floor 223:20	follow 187:17	94:14 98:4	221:24 222:18
flop 200:10	following 11:25 166:15	100:10 102:3	223:4,18 224:7
flow 134:1	follows 5:5	110:18 115:2	225:3
flowchart 75:11,15,16	footnote 206:20 206:25 207:9	116:3 120:3	format 178:3,8
76:7,10,24,25	foreign 14:20 15:3,9,16	123:10 124:5	178:17 181:18
77:6,7,13,18,22	form 9:3 11:12 14:23 15:7,18	129:2 130:16	190:19 214:6
77:24 78:5,11	15:25 16:10,19	131:19 132:20	formatted 178:24 190:24
86:17,21 90:21	17:5 18:4	134:6 138:4	191:17
91:1,15 92:5,9	20:14 30:2,15	139:3 140:10	former 139:19
93:14,20 95:24	31:7,25 33:23	141:13 142:23	143:20
96:14,17,18	38:16 39:21	143:7 144:21	forming 44:15
98:8,21,22	41:5 42:22	145:9 146:22	forward 187:7
99:1,6,17,22,24	44:22 47:14	147:14 150:5	187:7,23
100:3,5,8,14,19	48:15 51:7	151:6 153:12	found 156:21
101:9,14,16	53:12 54:11	154:11 155:4	218:12 219:5
102:25 105:12	56:17 57:6	157:13 160:7	foundation 148:10
110:17 115:5	58:20 59:3	162:11,24	four 16:5 199:5
132:18 134:19	60:22 62:1	163:12 165:3	fourth 99:13,13
136:8,9,17	63:17 65:3	173:1 174:17	99:13 128:1
157:18 158:2	67:22 68:11	180:20 184:18	frame 175:18
166:7 168:13	69:7,11,23	186:15 192:6	175:23 176:4
168:14 209:12	70:17 71:13	192:15,22	176:14,17
209:18	72:15 73:7	193:10 194:13	177:14 178:14
flowcharts 98:25 101:11	74:2 77:2 78:2	194:22 196:12	181:22 182:4,7
fluctuate 22:8 31:22	78:17 79:3	196:25 197:18	182:10,16
		199:19 201:16	183:4,6,11,12
		201:24 202:17	183:15,15,19
		203:2 205:24	183:19,21,23
		207:18 212:15	183:23 184:3,4
		213:16 215:10	
		215:19 216:13	

184:5,16,19,23 185:7,9,10,11 185:12,21 187:2,3,12,13 187:20 188:1,2 188:4,7,8,9,15 188:20,21,25 189:1,5,6,18,19 189:19,22,23 190:3 191:1,10 193:7,8,14,15 211:23 214:14 214:24 frames 175:22 176:2,2,3,10,12 178:12,13 182:12,21 183:25 184:14 185:1,2,4,18 187:1,1 188:19 191:5,7,8,9 fre 148:11 freesites 223:6 freeze 70:16 139:21 142:3 143:21 freezes 139:25 141:17 freezing 59:19 59:23 60:5 67:1 68:2,18 69:14,21 70:6 71:8,20 142:6 151:25	frequency 211:11,13 frequent 184:13 front 5:16 37:24 90:21,22 119:20 144:9 147:17 159:20 173:10,17 193:17 208:22 frozen 71:12 146:2,9,9 151:13,20 fubo 224:1,2 fubotv 1:6 2:21 62:9 223:11 231:4 full 5:11 38:2 111:13,13 fullness 91:5,23 92:7,15,21 93:12 100:16 133:1 134:23 fully 81:17 83:5 90:10 functionality 138:3 further 24:15 33:13 55:23 57:21 62:21 97:12 107:14 109:12 112:6 118:15 123:14 125:10 135:13	146:2 154:20 170:2 174:25 175:8,16 176:18 179:10 182:18,24 190:24,25 226:11,19 227:15 furthermore 164:7 167:8 182:5 204:9 211:25 g g 3:2 5:1 231:1 gap 41:1 187:2 188:19 gaps 43:16,17 43:23,25 general 141:6 201:10 generally 72:10 73:13 149:16 153:4 203:8 225:20 generate 176:1 178:11 generated 136:22 generating 128:17 133:4 136:22 generation 216:1	gentleman 219:19 gentlemen 220:7 geometric 19:22 25:17 31:11 33:12 34:5 getting 7:18,21 46:1 95:4 134:8 143:15 225:9,23 give 13:24 20:17 27:5 63:12 78:13 79:22 104:23 104:24 given 22:9 32:4 52:12 57:20 98:12,16 104:23 156:10 gives 26:2 giving 47:1 50:22 52:16 55:13,24 go 8:3,16 14:3 24:25 34:12 38:10 47:18 59:12 62:21 76:15 77:18 86:14 93:15,18 95:22 100:17 140:21 143:12 154:18 156:19
---	--	--	---

164:16 184:10 197:3,5 200:12 214:25 224:17 goal 50:4,5,6 52:25,25 55:16 goes 11:25 20:6 33:1 49:14 101:18 109:11 123:7 125:20 161:16 178:19 184:7 190:23 195:3 going 5:24 13:5 17:10 34:12 35:2 36:9 65:5 80:9 101:22 135:21 136:12 148:2 170:8 178:9 193:19 200:6,9 202:9 225:25 226:12 good 5:9,10 119:2 goto 99:6,8,16 100:24,25 101:5 governor 227:8 gray 102:17 great 8:25 74:19 greater 24:19 84:14,25 91:24 92:7,22 93:2,2 94:21,23 95:24	100:17 101:2 guard 215:25 216:20,23 guards 216:16 guess 61:16 75:6 76:9 78:13 92:18 134:8 141:14 149:6 212:18 226:1 h h 4:5,8,10 5:3 5:13,14,14 148:25 227:4 228:1 230:3,4 h.261 178:3 181:17 184:8,8 190:18 192:4,5 192:14 half 132:7 hand 35:2 38:4 80:9 169:19 handed 36:11 36:12 37:1 148:19 handing 20:21 75:18 handle 113:12 handling 118:9 hanft 3:10 happen 39:1,7 40:8 41:21 93:13	happened 135:9 happens 11:5 32:9 135:8,16 hd 45:13 head 193:13 heading 45:1 hear 97:7,25 124:17 183:8 hearing 71:17 130:11 219:24 heavily 33:4 held 147:10 help 62:17 63:6 63:20,24 72:20 helpful 32:2 53:24 71:16 72:23 80:7 104:18 helps 30:20 38:20 80:19 216:23 henry 1:15 4:5 4:10 5:3,13 74:15 148:25 227:4 228:1 230:3,4 231:5 high 25:10 higher 18:25 24:17,20 98:12 101:3,4 130:13 highest 96:1 105:4 107:1,19 109:14,20	113:11,14 118:1,5,8 121:6,20,22 122:15 123:13 125:12,16,19 126:2 129:21 131:6 135:22 135:23 159:9 highlight 214:6 highlighted 158:4 163:15 166:7 169:21 highlighting 38:17 158:15 highlights 102:16 111:25 highly 207:23 histories 37:11 147:20 150:22 history 34:25 35:4,17 36:17 36:22 38:19,22 39:16,20 40:1 40:6,20 42:4 42:17 44:2,15 47:10 51:3 53:7 54:5,7 140:8,13,16 141:3 146:15 147:5 153:1 hmm 189:12 209:2 hold 177:17
--	---	--	--

hong 3:9 hope 16:21 81:12 83:11 85:7 90:5 95:10 houh 1:15 4:5 4:11 5:3,13 34:19 35:8,15 66:10 74:15 93:25 144:17 148:25 175:8 197:10 200:17 202:7 227:4 228:1 230:3,4 231:5 houh's 130:12 hour 34:13 193:20 hours 220:22 220:23 house 3:10 hypothetical 147:8	ignored 174:21 175:4 176:11 ignores 104:17 image 185:14 208:10 immediately 89:4 130:24 160:24 impacted 31:12 implemented 160:16 186:13 implementing 186:11 implication 182:18 implications 174:25 175:9 175:16 176:6 176:19 182:24 214:12 implicit 215:5 imply 53:22 importantly 91:21 incidentally 226:9 include 42:5 46:23 51:4 53:9 54:8 77:8 115:18 139:1 140:1 169:25 181:17 198:2 207:3 210:18 210:19	included 39:14 40:20 41:19 42:6 50:20 55:25 114:4 140:20 155:3 155:11 193:7 includes 38:24 41:7 43:21 82:2 145:20 154:3 179:17 215:12 including 19:2 55:24 87:1 95:22 167:3 174:9 179:17 181:3 218:8 219:4 inclusion 115:4 157:17 184:13 inconsistent 202:4,25 incorporated 214:18 incorporates 178:4 181:15 182:25 190:19 214:7 incorrect 43:16 85:15 204:21 210:3 incorrectly 203:19 204:19 205:16 209:24	increase 34:4 98:16 increased 110:7 increment 93:17 incrementing 194:11 independently 175:19 176:1,9 176:9 178:12 182:11,15,17 183:20,22,24 185:8,18,22 191:1,2 211:22 214:23 index 19:18 38:15 39:3,10 40:10 41:23 43:11 indicate 93:21 100:7 105:14 143:24 170:18 198:20 indicated 48:8 indicates 48:3 191:23 indicating 112:4 118:22 118:23 144:1 160:16 indicative 27:24 28:2,3 33:9 198:3
i			
i.e. 19:14 107:5 128:16 identification 148:16 227:7 230:5 identified 10:5 identifies 82:22 identify 172:12			

indicators 128:18 133:5 136:24	initiated 81:8 input 99:10 109:25 168:18	international 75:23 186:6 internet 62:14	133:8,9 150:2 213:13
indicia 60:19	inserted 103:25	interpret 153:5	interruptions
individual 30:13 174:5	instance 84:24 89:1 159:16	210:24	44:5,21 45:14 46:7 50:1 51:6
individually 12:15	instances 71:22 72:2 104:19	interpretation 115:24 116:1	51:19 52:13,20 53:11 54:10
individuals 59:9 60:25 62:23 65:15 66:5	169:13	152:6 209:17	56:16 59:24 63:25 65:24
industries 1:6 3:7 223:12	instruct 7:12 7:25 13:7,21 225:5	interpreted 152:23	66:17 68:10 107:6 108:11
inefficient 112:8 167:25	instructing 7:15 8:12 13:10,23,25 225:13 226:1,2	interrupted 56:9 57:2,5 58:18 103:5,10 104:5,20 114:20 115:20 139:2 151:4 155:11	122:7 123:4 124:3 127:4 131:11 135:25 143:5 151:24 155:22,23 210:25 211:21 214:22
inexplicably 72:7	instruction 221:2,7,21,23 222:10 226:5	interrupting 115:13,13 166:11 168:10	interval 22:18 22:22 23:8,15 26:16 31:13 32:13,13,21,22 33:5 150:14
influenced 33:5	intended 42:5 51:4 53:9 54:8 56:4 100:6 198:19	interruption 42:19 43:1,5 45:7 67:21 69:5,22 104:13 106:4,19,25 107:7,13 108:8 109:9 120:14 120:19 121:14 122:10,24 123:9 124:9 125:8 126:12 126:18 128:11 129:8,10,22,25 130:21 131:7	intervals 22:14 22:23 23:13 26:21,22,25 27:4,7,10,19,20 27:23 28:20,22 29:2,6 32:7,9 32:15
inform 38:20	intends 165:1		intervening 99:15 100:13
information 13:25 184:4 222:3,20,22 224:10,12,15 225:5,11	inter 4:12 74:16 149:1 175:23 176:14 184:16,19,23		intra 176:2,4 176:17 178:14
informing 50:22	interested 71:7 227:17		
informs 42:3	intermediate 188:18		
inge 2:15 221:13,15	internal 108:18 117:5		
inge.osman 2:20			
initial 217:19			

181:22 183:6 183:12,15,19 184:14 187:20 191:10 introduced 22:25 33:25 introduction 7:5 148:9 invention 62:15 73:16 152:25 192:21 inventors 47:11 involve 210:9 involves 124:12 127:18 188:18 190:4 205:12 involving 175:23 212:7 ipr 6:6 10:4,11 35:5 36:14,20 75:3 200:22 218:9 ipr2024-00917 1:12 iprs 36:3 218:17 220:5 irregular 22:23 irrelevant 114:21 issue 41:13 46:13 48:4 54:23 62:9 151:18 173:22 177:5	issued 50:16 227:8 issues 29:13 62:15 68:2,7 72:4,5 146:13 154:21 226:10 italicized 55:20 italics 52:7 itc 217:7,11 218:8,11,11,12 218:18,22 219:1,5 item 12:9 itu 184:8	81:2,21 85:11 87:20,21 89:12 102:12 103:14 103:21 104:3 104:21 105:15 115:3,10 116:18,23 137:15 139:20 141:9,14 143:16 147:3 155:21 157:23 158:9 159:16 160:9 164:19 166:9 168:8 169:23 170:2 171:13,23 172:3,7 173:23 174:21 175:3 176:10 204:8 204:21 205:3,4 205:11 206:1,6 206:12 208:9 208:11 209:3 209:21 210:23 217:6 218:25 jeffay's 43:15 57:25 67:8 79:17 80:6 102:21 103:2 104:11 105:15 106:13 114:18 115:22 155:24 156:3,6,11 157:17 160:11	163:14 166:5 169:17 171:18 172:19 176:24 180:12 203:25 205:14 208:15 208:21 209:16 jerkiness 150:3 jill 1:22 227:2 227:21 jitter 22:24 23:18 26:14 27:5,21,24 29:7 33:20 34:1 job 1:23 203:8 228:25 229:23 230:11 joseph 3:12 july 1:16 227:5 229:24 231:3 jump 67:14 99:19 143:22 160:10,16,17 160:20,22 161:5,18,25 162:7 168:20 171:2,7,8 jumping 72:6 151:22 jumps 93:15 175:1,17
	j		
	j1 93:18 99:9,9 j1a 90:25 92:4 92:13,14,19 99:9 100:15,19 j2 93:16 j3 93:9,15 100:18 j4 99:22 101:8 101:16 132:22 132:23 134:3 james 3:10 jamie 3:11 jeffay 10:15 56:10,13 59:9 60:18,25 62:22 65:14 66:4,21 69:24 78:20 79:8,14,24		

k	130:15,18	169:1,6 209:19	lead 213:13
k 1:22 2:6	133:13 135:2	labeled 6:18	leading 197:24
227:2,21	135:13 136:11	45:1 82:1	197:25
kind 24:24	136:19 139:5	101:13	leads 62:5
25:10,17 32:7	139:14,15,22	laid 140:17	leaning 41:7,8
34:1 50:3	142:3 143:14	155:15 156:11	41:9,11,12,16
57:21 71:6	145:13 152:9	162:13 176:7	41:24 42:1,12
72:7 100:18,21	152:22,22	192:16	42:12,13 43:4
105:22 106:11	154:6 160:19	language 48:11	43:6,11,18,19
151:7 157:24	161:6 162:16	48:13,18 49:18	43:24 56:7,8
175:4 179:9	164:4 167:3,15	50:8,11 52:23	56:12,14,16
191:24 208:9	167:23 168:7	53:1 54:19	57:1,4,9,14
kinds 151:24	169:16,23	95:25 131:15	58:2 75:16
know 17:7 25:9	170:5,14 171:1	132:4,6 138:7	76:4,5,11,24
29:1,3 32:10	177:5,6 179:19	138:11 139:22	77:14 78:15,19
32:12,12,17,20	185:17 187:22	140:14,22,22	79:13,19,20
33:1,16 34:3	188:11 190:10	143:11,13	82:3 83:16,16
36:21 44:3	191:13,16	145:20 154:4	83:19 84:2,8
48:11 50:2	193:2 195:13	196:9	84:16,17,22
51:11,21 55:10	198:24 201:17	large 34:2	85:11,16 86:4
55:18 56:25	208:3 211:17	largely 208:25	86:18,25,25
57:10 58:11	214:11 218:2	latham 1:17	87:18,20,25
59:20 62:5,20	knowledge	2:13	88:9,23 89:9
65:5 66:15,16	191:24,25	lawyer 39:22	89:13,15,20,22
67:10,25 69:18	known 22:24	lawyers 13:17	89:23 90:20
70:19 72:6	81:4 183:23	lay 41:13 85:19	91:16,21,22
73:1 80:19	199:20	156:1 163:17	92:4,20 93:5,8
84:23 87:18	l	166:14	94:1,16,16,19
94:22 98:18	label 98:21,24	layer 73:18,23	94:24 95:14,15
99:14 100:15	98:25 99:4,4	73:23	97:21 98:10
106:6,6 107:16	100:1 163:16	layers 73:21,25	103:3,4 104:4
113:12 116:5	166:8 167:12	laying 83:17	104:11,17,17
125:1,22	167:13 168:25	lays 87:24	105:2,12 106:3
		192:8	106:17,25

107:2,3,4,6,11	170:14 171:5	219:13	limited 164:20
107:22 108:7,9	171:13,23	leaning's	171:13,23
108:10,15,23	172:4,8,24	107:18 110:17	172:9,20,25
108:23 110:3,8	173:4,8,18,23	124:22 127:4	line 9:10 11:4
111:2,10,17,25	174:8,10,15,18	133:22 168:13	11:17 21:9
113:7,21,25	175:10 176:8	186:6,11	22:7,13 23:3
114:21,24	177:7 178:22	192:14 195:20	24:2,12,14
115:6,24 116:2	179:14 180:16	197:22 213:3	25:3,15,19
116:11,21	180:18 181:4,6	leaving 101:13	26:19 31:20
117:2,9,25	181:8,11,19,23	101:18	62:6 77:8,12
118:17,19	182:2,6,19,25	left 99:10	77:25 78:6
120:2,11,13,17	183:6,12,20	109:24	81:5 83:3,9
120:21 121:12	184:7,12,15,19	legal 145:10	90:18,19 102:4
122:1 123:8,11	185:19 186:4	231:23	122:2,3 123:7
123:24 124:2,7	186:20 187:18	length 23:9,10	123:7 125:1,1
126:11 127:10	188:11 189:2,6	23:11,14 33:3	126:24 128:2
128:10,10	189:8,17,23,25	33:10 199:18	145:3,4 159:24
129:5,16 133:7	190:11 191:11	letting 167:3	160:15 165:17
133:19 135:11	191:14,14,16	207:3 210:20	168:19,25
135:14 136:10	191:19 192:12	211:6	169:6 174:23
136:12 137:1	194:12,16,20	level 25:10	174:23 175:14
137:10 140:24	196:10,22	leveraging	178:9 181:12
140:25 153:21	197:16 198:1,5	107:8 120:15	182:9 184:21
154:2,15,23	198:7,22	light 118:18	186:20 189:8
155:21,25	199:14,15	limitation	189:11 195:1,8
156:3 157:1,10	203:10,12	95:25 110:24	195:9 199:15
157:12 158:3,7	204:1,15 206:6	193:16	199:15 228:5
158:15,21	206:10 207:15	limitations	lines 9:12 98:10
159:6,20 160:4	207:19,21	59:15,22 60:4	120:21 130:20
162:6 163:7,19	210:4 211:1,25	61:5,11 65:22	136:4 177:22
164:6,7,19,25	212:16 214:1	66:2 70:9	177:23 179:7
165:9,12,23	214:10 215:15	138:15 140:2	181:11 186:21
166:1,10,23	215:21,24	152:1	188:12 191:11
167:14 168:5	216:10 219:13		191:20

list 11:20 12:3 12:3 16:7 listed 10:12 12:17 13:1,18 14:11 16:4 37:16 lists 16:6 literal 53:17 literally 51:22 182:8 little 32:2 58:3 103:16 117:7 179:1,1 218:14 219:24 live 215:25 216:2 llc 1:9 2:11 231:4 llp 1:17 2:3,13 3:1 locally 84:6 logic 86:17 100:7 long 191:21 193:19 198:13 199:5 220:20 longer 55:9 look 9:17 10:2 14:16 20:15 21:7,9 23:1 24:11,23 25:14 37:24 40:5 46:15 50:17 52:18 53:21	55:22 58:10 62:4 68:19,20 69:12,25 70:2 70:3 71:24 73:9,10 79:17 84:1 86:12,24 99:1 105:23 120:9 122:13 138:6 140:21 143:12 144:8 144:16 158:6 160:14 172:3 173:13,16 174:23 177:17 177:21 179:3 180:4 192:10 192:19 193:16 201:19 205:6 218:20 looked 56:2 58:14 66:23 79:25 127:17 139:16 140:15 146:4 looking 15:12 35:11 39:15 44:16 53:15 66:13 73:1 77:1 80:25 82:14 91:4 131:20 138:16 150:6,23 158:19 161:12 179:18 197:11	198:23 213:9 217:18 looks 145:3 loss 72:14 73:14 lost 195:23 lot 23:18 66:12 149:15 173:11 189:25 192:2 202:8 lots 173:10 love 52:18 low 128:18 133:5 136:23 lower 38:4 109:19 110:5 125:15 169:19 lunch 119:2,7,8 lw.com 2:19,20 lynn 3:11	117:17 174:16 179:5 193:14 196:23 198:9 204:22 214:19 224:16 makes 85:16 making 60:10 144:25 151:10 195:20 196:10 196:22,24 197:16 manner 178:5 190:20 214:8 manual 46:2 49:16 51:23,23 55:6,9 manually 45:10 45:15 47:1,23 48:5 49:1,7 51:13,16 52:4 54:16,24 mappings 192:8 margin 19:4,5 19:14,19 mark 148:3 marked 14:9 20:22 35:3 36:13 75:19 80:10 99:13 148:7,15,20 216:5,18,20 marketing 67:4
		m	
		made 16:21 55:23 98:14 139:5 155:17 155:18 174:7 181:3 230:1 main 45:7 140:12 majority 107:8 120:15 123:2 128:14 134:18 make 9:7,10 35:11 90:23	

marks 20:10 21:13 marred 46:6 49:25 51:5,19 52:13 53:10 54:9 massachusetts 1:19 227:9,10 material 179:17 materials 16:4 16:6 17:3 197:11 218:21 matter 9:18 12:11,11,19 21:2 37:6,7,11 37:15,21,22 76:3 102:22 128:1 200:23 208:23 209:1 217:20 223:5,7 227:5 matters 21:1 37:9,15,18 223:2,12 mean 14:15 18:15,20 19:22 25:17 28:6,15 30:1 31:11 33:13,24 34:3 34:5 39:19 44:16 53:22 54:13 58:17 59:1,11 60:7	60:15,23 61:8 61:14,20,22 63:1,10,15,23 64:1,8 65:1,19 66:7 68:8,9 69:5,8,21 70:13,20 71:7 89:13 94:9,10 97:13 98:7,20 98:24 99:3,25 112:20 114:18 136:8 140:21 143:12 146:24 150:19 152:18 154:13 157:9 157:12 166:2 169:21 171:20 180:1,21,24 189:15 192:7 192:16 193:3 193:12,12 194:25 197:16 198:16 202:20 203:5,23 204:18,24,25 205:23 206:8 212:12 220:2 223:21 224:1 meaning 38:23 39:4,14,24 40:13 41:19 50:20 61:13 140:15 141:4 152:14 154:7	165:13 183:21 184:2 185:6 meanings 69:4 69:10 165:2,13 means 39:11 40:11 59:25 60:1 65:10 78:22 79:1 134:7 154:13 160:5 162:10 169:12 183:24 184:1 196:22 200:1 meant 29:23 53:13,14 80:1 153:11 212:14 measure 23:20 measured 98:11 101:2 128:17 133:4 136:22 measurements 25:20 measuring 27:15 28:22 media 1:6 2:21 72:10 73:15 81:8,9,18 83:6 83:8 90:11 223:11 231:4 meet 60:3 61:4 61:10 152:1 158:21 221:18 221:19	meeting 151:12 221:8,9,11 222:15 224:1,3 meetings 220:25 221:3 222:12,13,24 223:14,25 meets 59:14,21 65:21 66:1 70:8 140:25 154:15 memorized 70:21 mentioned 9:20 10:12 74:1 141:7 151:22 192:2 mentions 122:6 131:16 merely 218:24 merit 227:2 met 20:5 151:13 220:18 225:8,13,14,18 225:20 method 144:20 methods 185:10 metrics 67:5,6 middle 24:13 25:1 44:12,20 77:12 78:4 101:7 120:12 160:20 169:18
--	---	---	---

173:14 mind 73:8,12 110:16 153:10 219:23 mine 6:5 minimum 19:4 19:18 174:5 minus 32:14 minute 79:22 200:7 minutes 156:14 193:22,24 mirror 26:25 mischaracteri... 89:14 mismatches 187:11 missed 180:2,2 180:3,4 missing 47:17 mistake 104:1 mistracking 187:6 188:5,7 misunderstan... 104:17 mixture 176:1 178:11 mm 189:12 209:2 mode 109:22 110:22 187:7 187:23 modification 109:12 122:10	122:13,17 123:8,21 124:3 124:8,8,11,18 125:9,11 126:5 126:6,14,23 127:5,12 128:4 128:5,5,6 129:8,19,24 130:6,7,21,23 130:25 131:10 135:20 136:3 modified 158:1 module 19:4,17 24:16,20 moment 95:20 146:14 monday 221:3 monday's 221:8 monitoring 49:11 monitors 27:10 mono 105:5 109:22 111:11 113:12 123:19 125:23,24 126:16 morning 5:9,10 move 53:25 58:3 59:13,18 59:21 60:3 61:4,9 65:21 65:23,25 66:9 66:15,16 67:5	67:9,19 68:1 69:17 70:5,14 71:11,19 137:3 138:3,19 139:6 139:11,14,19 139:20,24 141:17,20 142:1,2,19 143:3,17,21 145:7,15,17,18 146:2,8,17 147:2 151:19 151:25 155:17 155:19 162:19 164:23 185:24 move's 68:15 139:17 moves 100:25 161:19 moving 100:19 mpeg 175:25 177:13 178:3,8 178:11,16,20 178:24 181:18 181:20 183:22 184:2 185:5 190:18,24 191:6,17 192:20 193:7 193:13 214:5,6 214:13,17 mrte 101:1 multiple 69:4 69:10 88:8	165:2,12 multiplies 23:9 n n 4:1 5:1 23:4,5 23:18 25:19,20 25:20,20 30:17 34:3,4 n.w. 2:6 name 5:11,13 named 219:19 names 194:12 221:10 nature 47:11 near 179:16 necessarily 109:9 125:7 necessary 105:6 116:20 158:24 167:1 189:4 212:4 213:5,18 need 106:24 108:2,16 110:12 113:8 113:10 116:6 116:15,18,22 116:23 117:10 117:11,14 118:5,11 121:17 126:19 126:25 127:14 129:21,22 131:4 133:25
---	---	---	---

135:20 159:6 159:10 164:12 174:7 181:3 212:17,25 213:1,20 224:21 needed 112:19 174:15 189:22 needs 84:8 89:2 89:3 94:1,16 94:16 164:1 negative 103:24 104:1 neither 95:13 227:13 network 3:12 18:3,11,16 19:6,24 20:9 21:11,18,22 22:4,8,25 27:24 30:19 31:1,2,14,15,21 33:11,14,17,21 62:13,15 73:19 81:16,19 83:4 83:6 90:9,12 never 159:10 170:23 172:24 212:4 226:9 nevertheless 43:3 new 3:4,4 111:22,22 112:1 113:2,3	117:16,23,23 118:13,14,20 148:5 159:3,12 160:24 164:3 167:5,5,22 170:11 187:4 188:21 207:25 211:8,10,10,14 212:11,20,22 212:23 213:11 nextrate 101:2 101:3 nexus 218:12 non 217:2 nonresponsive 162:20 normal 187:22 199:24 normally 187:10 notary 227:10 230:4,7 note 129:7 195:21 196:10 196:24,24 197:17 198:9 217:6 231:10 noted 229:25 notion 27:5 notwithstandi... 43:14 56:9 number 5:20 6:24 11:4,17 12:17,23 19:25	34:2 37:6,21 37:22 38:4,4 44:12 47:21 75:7,8 78:13 78:13 101:9 110:4,6 169:18 175:22 176:12 182:12,21 186:7 191:5 198:2 199:3,7 199:8 200:22 210:4 numbered 37:14 197:24 numbers 6:7 7:3 9:10 37:8 37:11,19 198:17 nw 2:16 o o 5:1,14 oath 5:4 object 8:10 9:3 11:12 14:23 15:7,18,25 16:10,19 17:5 18:4 20:14 30:2,15 31:7 31:25 33:23 38:16 39:21 41:5 42:22 44:22 47:14 48:15 51:7	53:12 54:11 56:17 57:6 58:20 59:3 60:22 62:1 63:17 65:3 67:22 68:11 69:7,11,23 70:17 71:13 72:15 73:7 74:2 77:2 78:2 78:17 79:3 82:25 83:22 86:19 88:10,21 91:7 92:17 94:14 98:4 100:10 102:3 110:18 115:2 116:3 120:3 123:10 124:5 129:2 130:16 131:19 132:20 134:6 138:4 139:3 140:10 141:13 142:23 143:7 144:21 145:9 146:22 147:14 148:9 150:5 151:6 153:12 154:11 155:4 157:13 160:7 162:11 162:24 163:12 165:3 173:1 174:17 180:20
--	--	--	---

184:18 186:15	occupy 112:11	20:20 23:23	137:8,13 140:6
192:6,15,22	168:3	24:4 26:11	142:16 143:2
193:10 194:13	occur 84:10	27:25 29:20	144:7,23
194:22 196:12	94:3,9,19	33:19 34:11,20	146:12 147:9
196:25 197:18	100:14	35:18 38:6	147:25 148:18
199:19	occurred 40:25	44:6,18 47:7	149:4,9,19,22
objection 7:11	occurring	50:25 53:19	150:25 152:13
8:1,9 13:6,20	31:15 213:14	56:21 58:1,9	153:7 154:5
65:12 141:11	occurs 115:8	58:14,15 59:6	156:20,23
169:3 201:16	137:2 160:15	63:13 64:3,15	157:8 159:23
201:23 202:16	166:11,12	64:22 65:7	162:3,18 163:4
203:1 205:24	168:9 204:4	68:6,22 69:1	164:15,17
207:17 212:15	205:8	69:15,20 70:24	165:20 168:12
213:15 215:9	october 149:10	71:5 74:7,9,19	168:16,23
215:18 216:12	odd 67:12	75:5,9,10,14	169:10 171:10
217:14 219:9	143:23	76:6,14,18,19	171:21 172:23
219:15,22	odds 142:7,9,18	78:8,24 79:21	173:25 174:13
220:8,14,21	office 1:1 55:11	80:4,9 82:6,7	176:8,22,25
221:1,6,20,23	147:17 223:15	82:16,20 86:9	177:4,17
221:24 222:17	ogdon 218:9,17	86:14 87:23	179:25 180:7
223:3,17 224:6	oh 40:6 58:23	88:5 91:19	180:11 183:17
225:3	90:16 108:24	92:2 93:10,22	184:6 185:23
objections 64:9	132:2 165:7	94:7 96:6,11	186:1 189:7
73:17 155:12	179:24 196:2	96:20 97:2,15	190:6 192:2
obtaining	okay 5:23,25	97:18 98:1	194:2,9,18
25:16 84:6	6:10,17,21 7:7	105:7,17	195:18 196:20
obvious 57:18	8:15,19,25 9:5	106:14 107:24	199:13 200:2
78:15 112:17	9:14,23 10:1,3	114:13,23	202:23 203:9
obviously	10:17,23 11:6	119:22,23	203:17 205:19
156:5 175:20	11:18 12:2,13	121:24 122:5	206:16,24
202:9 212:21	12:21 13:15	124:10 128:8	207:11 215:2
obviousness	14:3,7,18	128:23 130:9	215:13 220:3
217:2	15:21 16:14,23	131:14 132:2,9	220:11 222:6
	17:9,12 18:14	133:23 136:5	223:23 226:7

226:22	113:18 120:24	103:8,18	40:17,23 42:8
old 112:3,23,25	121:9 127:7	124:12 140:9	54:2 82:10,13
117:15,20,21	128:1 130:12	146:19 147:10	99:17 110:2
118:22 126:7	131:12 132:19	155:2,10	111:1,16
126:19 158:17	152:19 153:13	164:24	112:20 113:24
158:23 159:1	153:17 155:15	opinions 9:21	114:5 116:10
163:25 167:4	156:8 180:9	15:3,9,17,24	134:19 136:18
167:17,20	190:23 192:17	16:9 17:4	138:1 152:24
170:6,10,10,17	217:12,19	44:15 64:1,21	156:25 157:11
208:2 210:7,10	218:2,21	155:14,25	158:11 163:6
210:17 211:7	opens 48:25	156:3 163:3	163:18 166:17
212:10 213:1	operated	202:2	174:6 181:1
213:22	109:22	opportunity	186:12 192:1
omission 99:15	operates	156:10 219:2	195:14
omit 133:20,24	126:22	opposed 47:3	original 41:14
133:25 134:7	operating	47:13 135:8	57:23 96:25
135:4,12	109:6 122:15	211:11	100:3 105:1
omitted 99:8	operation	option 114:15	106:12 107:17
omitting	66:10 67:20	114:22,24	107:23 108:6
128:15 131:16	109:6 125:5	116:5	120:23 121:9
132:4 133:4	opine 171:23	oral 130:11	121:16 122:20
136:19	opined 14:22	order 84:10	131:25 138:13
once 62:12 89:4	218:6	94:2 108:14	152:16,18
221:19	opines 164:19	109:8 125:6	153:9,13 154:8
ones 10:5 14:22	171:13	126:10 185:13	155:1,9,13,14
15:5 101:15	opining 15:5	198:6,18	176:21 177:2,8
open 5:20	172:7 220:5	212:18 215:7	179:9 190:10
47:17 226:10	opinion 14:19	216:11,24	191:23 192:7
opened 96:8	14:20 15:2	227:8	198:3,21
opening 16:5	30:22 59:7	ordering 198:4	osman 2:15
57:21 75:1	60:14,17,23	198:14	21:3,6 75:21
77:17 96:3,7	61:21,24 64:7	ordinary 38:12	148:13 197:3
96:25 106:7	64:13,16,25	38:20 39:6,14	221:16 224:13
111:8,9 113:5	65:9 71:18	39:19,23,24	

outages 62:14	155:18 217:25	132:19 136:4	24:5,13,15
outcome 227:17	owner's 59:16 61:2 138:19	140:16 149:6 149:24 158:3	25:23 33:16 34:19,22 35:10
outlined 87:14	142:13 143:19	159:19,22	35:15 37:2,16
output 107:6 108:12 109:10 122:7 124:4 125:8 126:13	144:5 145:14 145:24	162:6 168:14 169:5,17,18,19 173:13,14,17 173:18 174:22 175:14 177:21 177:22 178:22 179:15 180:16 181:5,9,11 182:9 184:21 186:20 188:11 189:8,11,24 191:20 194:16 195:25 199:15 206:18,18 207:20 208:12 208:19 209:12 214:1 215:23 217:1 228:3,5	38:3,10 44:20 44:25 45:8 47:5,18 48:14 48:20,24 52:6 55:21 58:4,6 58:10,14 60:10 62:5,21 63:12 64:24 68:5 69:19 71:1 72:21 76:20,23 77:23 78:7,10 80:3,5,16 81:22 84:3,3 84:17 85:21,24 86:3,12,15,22 87:24 88:4,22 91:11,14,20 93:7,23 95:19 96:3,12,13,19 96:24 97:3,4,5 97:8,9,10,14,16 97:20 98:7 101:20,22,23 105:9,24,24 106:2,16,23 107:15 108:1,5 109:1 110:25 114:9,12,14 115:6 116:9 118:23 119:10
overview 67:3	p		
own 17:7 67:8 138:19 139:6 142:13 143:19 144:5 147:19 147:19,19 185:19	p 5:1 p.m. 226:25 packet 23:22 72:14 73:14 packets 22:18 22:20,21 33:7 padding 110:7 page 6:12,14,23 6:24,24,25 7:1 7:5 10:13 12:1 12:9,18 37:25 38:3,4 44:3,3,7 44:9,10,13 46:20 48:9,9 51:20 74:24 75:6,8,12 76:8 76:12,24 77:6 77:11,14,19,22 77:25 78:5,6 86:18 95:21 98:22,22 99:2 102:19,20 109:1 121:4 122:2,3,21 125:2,3 127:25 130:20 132:7		
owner 1:10 41:3 59:13,16 59:20,25 61:3 61:7,12 62:24 63:9,21 65:16 65:17,20,25 66:3,6 67:10 70:8,11 82:18 82:22 139:5,10 139:24 140:17 141:2 143:17 145:23 151:10 151:11,14,19 152:3,7,8		pages 11:25 43:2 76:10 136:8 138:17 213:5 pains 230:2 panels 147:24 paragraph 10:2 11:19 12:24 13:19 17:10,20,22,23 17:25 18:22 21:10,13,17	

119:21 120:7,9 120:10,24 121:1,3,7 122:2,6,14 123:6,12,25 124:24 127:9 127:23 128:7,9 129:11,12,13 129:24 130:2,8 130:25 131:8 132:1 135:18 136:2 137:3 138:9,22 145:11,13 146:4 149:20 149:23 150:6 153:18,18,25 154:9 156:19 156:21 157:19 158:19 159:15 161:11,16 163:6 164:16 165:8,17 166:5 166:15 171:12 171:17 174:1,3 174:3 175:7 178:9,19 179:8 180:25 184:11 184:21 185:4 185:25 186:2 194:5,10,15 196:3 203:16 203:18 204:23 206:19 208:13	208:20 209:11 209:23 211:18 213:8 214:25 215:4,8 217:5 paragraphs 30:23 51:20 53:21 82:2 85:3 102:13,14 105:23 120:7 157:20 172:22 178:18 179:2 191:19 205:5 208:14 parallel 109:23 paraphrasing 117:7 parenthesized 181:16 parker 3:2 221:13,15 231:1 part 19:8 33:15 48:1,17 53:23 54:21 55:6,12 78:11 90:1,22 97:20 100:18 101:8,25 103:16 105:2 106:12 107:21 107:22 111:9 114:6 140:25 154:1 160:17 172:20 173:9 179:9 206:6	208:4 209:6 212:6 partes 4:12 74:16 149:1 partially 33:24 particular 31:9 42:17 72:21 101:10 114:9 158:8 166:16 194:19 particularly 9:15 parties 227:14 227:16 partition 178:20 181:24 182:15 183:1 191:4,22 partitioning 174:25 175:16 178:5,16,25 190:20 191:3 214:8 partly 98:22 116:4 passage 11:15 25:4,11 48:21 50:18 108:24 131:11,22 135:17 136:4 186:19 194:25 196:14 passages 191:16	patent 1:1,3,10 1:13 4:13 6:7 10:20 11:9 12:11,19 17:14 17:19 20:16 21:2,9,15 22:16 31:19 34:18,25 35:17 36:16,23 39:19 41:3 55:11 59:13,16,16,20 59:25 61:2,3,7 61:12 62:24 63:9,21 65:16 65:17,20,25 66:3,6 67:10 70:8,11 74:16 75:3,23 78:22 79:1 80:20,24 81:3 82:5,18 82:21 83:21 85:4,18 87:9,9 87:10 89:20 90:2,17 95:7 96:23 120:23 127:20 138:19 139:5,10,24 140:17 141:2 142:13 143:17 143:19 144:5 144:13,15 145:14,23,24 147:11,17 149:1 150:11
--	--	---	---

150:21 151:9 151:11,14,18 152:3,5,7,8 153:6,9 155:18 186:5,6,14 192:21 200:4 213:6 217:24 220:2 patent's 162:15 patentee 141:2 patents 11:4,10 11:16 14:21 15:4 18:9 37:9 62:8 72:12 80:15 81:24 82:9 85:14 87:10 139:8 147:19 177:12 191:23 217:8 pause 20:18 80:18 203:15 peloton 149:17 penalties 230:2 pending 134:12 196:16 people 66:24 72:2 136:11 139:17 percent 32:12 32:14 84:19,19 84:25 86:5,6 87:2 88:1,1,24 88:25 89:2 91:18,18 93:1	93:1,2 94:21 94:23 percentage 128:18 133:5 136:23 perfect 148:23 perform 114:25 120:2 performance 18:24 19:21,23 20:4 23:25 24:2,6,7,14,18 25:13,16,18,22 25:23 26:2 28:24 31:10,11 31:17 32:25 34:10 performed 103:6,11 104:6 104:21 105:19 performing 134:3 period 81:14 82:23 83:1,7 83:14,20 90:8 98:13,16 209:7 periods 32:18 perjury 230:2 permitted 175:1,17 181:25 person 38:12 38:20 39:6,19 39:23 40:17,22	42:8 47:9 51:2 52:3 53:6 54:2 54:5 82:10,13 99:17 110:2,25 111:16 112:20 113:24 114:5 116:10 134:19 136:18 137:25 152:24 156:25 157:11 158:11 163:6,17 165:21 166:17 181:1 186:11 191:25 195:13 221:9 222:12 personally 66:16 230:4 petition 4:11 74:16 148:25 petitioners 1:7 pgzimmerman 3:6 231:2 phd 1:15 5:3 74:15 227:4 228:1 230:3,4 phi 25:16,24 26:3 phicurrent 19:10 25:7 26:5 phil 221:14,16 philip 3:13 phrase 21:11 40:14 42:15	63:1 picked 92:25 picture 175:19 175:22 176:13 182:8,10,13,22 185:21 191:5 piece 57:22 place 80:24 121:19 125:18 178:21 195:23 204:15 220:25 221:3,5 223:15 223:16 placed 87:4 89:5 95:1 131:5 164:3 places 99:5 173:11 202:15 placing 121:21 123:20 164:11 plain 39:14,24 play 26:24 28:12,14 30:7 113:22 114:25 117:20 170:9 195:21 196:11 196:23,24 197:17 198:10 199:6,7,8,16,21 200:1 204:24 207:4 210:21 211:6,11,12 212:9
--	--	---	---

playback 19:1	84:7,10,22	212:20 213:2	165:24 167:3
19:9,18 23:9	85:5,6,9,17	213:14,19,23	167:19 199:17
23:10,11,14	87:19 89:17	216:1	199:24 210:9
24:21 25:6	90:1,3,5,7,8	played 42:21	212:3 216:17
27:2 29:4 30:5	93:9 94:3,24	142:20 143:4	playout 84:9,15
33:2,3,10	95:5,9,11,17	167:6,21	84:19,20 85:1
38:14,23 39:4	97:21 103:3,9	199:25	86:6,10,11
39:11,12 40:12	104:4,20	player 66:9	87:2,5,6 88:1,7
40:13,21 41:1	114:20 115:14	67:5,9,19 68:1	88:9,19,24
41:19,20 42:6	115:20 118:15	69:17 70:15	89:7 91:6,10
42:10,20 43:21	123:9 127:19	81:9 83:8 89:3	91:11,18,24
43:22 46:5	137:11,16,17	109:18 125:13	92:22 94:2,12
47:13 48:17	138:12,14,20	138:3 139:15	94:18
49:22 50:3,12	138:23,24	139:20,25	please 10:8
50:21,21,23	139:1,2,9,12	141:17,20	14:25 20:16
51:5 52:24	140:2,4,5,13,15	142:1,3,19	21:4 22:2
53:10 54:9	140:19,19	143:4,18,21	48:14 71:16
55:16,25 56:1	141:4,4,9,12,15	145:15,17,18	97:24 143:1
56:5,9 57:2,5	141:16,22,23	146:2,8,17	196:7 197:15
58:17 59:1,11	142:4,5,10,11	151:13,20	221:23 224:17
59:14,22 60:1	142:14,15	152:1 155:19	plurality 49:10
60:3,6,14 61:4	143:19 144:2,3	178:4 181:15	55:8
61:8,10,14,22	144:4 145:1,8	190:19 195:1	plus 32:12,13
62:25 63:10,15	145:21 146:7,8	198:9 214:6,19	220:22
63:22 64:7	146:10,11,20	216:3	point 9:9 45:7
65:1,10,18,22	146:21 151:12	playing 87:7,13	59:19 60:5
66:1,4,7,17	152:2,11,12,15	89:4,9 111:3	66:12 67:25
68:9,10 69:5	153:11,16,22	111:18 112:22	72:8 81:25
69:22 70:9,12	154:3,8 155:2	112:25 114:2,7	83:15 88:3,12
71:12 73:6	155:3,10,11	115:18 116:12	89:15 95:2
78:15,19,23	166:12 168:10	117:22 157:3	103:15 104:10
79:2 81:10,11	175:12 187:22	158:13,25	104:16 112:2
81:13,15 82:23	187:23 198:15	160:19 163:8	115:3 118:21
83:2,9,11,13	199:22 208:18	163:20 165:9	126:9 135:10

138:18 139:4,4 141:14 143:16 145:11,12 158:16,18,22 159:5 161:13 161:15,19 167:16,19,21 167:22 170:16 171:2 172:2,19 173:7 175:6 177:2 185:2 191:8,16 205:15 208:1 218:5 pointed 67:18 78:21 106:16 121:16 140:12 159:17 176:20 190:9 191:13 pointing 52:16 57:23 68:18 86:23 87:17,20 88:12 89:8 160:9 208:15 218:24 points 88:22 104:6 141:17 158:10 policy 19:8 25:4,4 26:5 poor 45:12,19 46:4 49:2,3,23 51:17 52:8,19 54:15 55:2,14	55:19,19 portion 28:20 35:4 39:2,2,8,8 40:8,8 41:21 41:22 42:14,17 43:8,9 44:2 48:19 54:6 55:7 78:10 79:9 99:24 106:11 161:16 177:7 portions 41:15 42:20 43:7,8 44:17 47:21 49:10 66:23 222:24 223:24 posita 39:15 42:3 50:22 55:22 112:17 113:20 115:16 117:19 118:16 149:25 162:9 162:23 166:1 169:11 207:1 210:18 211:1 214:16 posita's 116:1 positas 40:3,5 151:2 possibility 122:7 possible 16:15 66:11 67:19 72:9,12 73:14	180:2 practice 142:22 145:6 practiced 146:8 155:20 practices 139:6 141:20 142:2 143:18 145:17 practicing 139:25 144:2 145:15,19 pre 55:12 precedes 122:14 138:16 preceding 130:25 136:2 187:13 188:20 189:1 predictively 176:2 178:12 185:3 187:12 187:25 188:15 188:25 189:18 191:7 prefaced 195:6 prefaces 172:11 prefer 159:25 160:22 preferable 122:25 128:12 133:10 134:16 198:25	preferably 176:4,16 178:14 181:21 182:3 187:19 191:10 199:10 prep 225:10,14 225:19,20,21 preparation 7:8,18,21 8:22 221:12 prepare 203:3 prepared 201:22 220:13 222:15 preparing 9:7 14:19 15:2 16:8 17:3 202:25 prescribed 227:7 presence 230:6 present 3:9 41:24 222:4,8 presentation 19:17 81:19 83:6 90:12 138:15 139:9 139:12 140:2 151:12,17 152:2 presented 187:12 188:24 230:4
---	--	--	---

presents 114:22	222:22 224:10 224:15 225:4	65:21,23 66:1 66:15,16 70:6	properly 185:14
pretty 55:24	225:11	70:8 71:11,19	proponents 67:13
previous 57:10 62:4 86:8 113:1 121:3 123:12 124:24 128:7 129:11 129:12,23 130:8 131:8 138:12,17,22 185:4,11 209:10 216:5	probably 37:12 80:23 110:1 114:11 119:2 149:17 220:22	138:20 139:6 139:11	propose 109:13 125:11
previously 7:10 10:6 14:9 20:22 35:3 75:18 80:10 218:15	problem 81:18 82:21 83:6 90:11 186:18 186:22 187:6 187:16,21 188:6,7	products 61:4 program 67:21 70:15 109:18 125:14 178:4 181:15 190:19 195:1 214:7,19 216:3	proposing 189:3,16
principle 173:12,14 186:13 190:12 214:2	problems 56:13 56:14	progress 49:11 49:13 100:7	prosecution 35:17 38:19,21 39:16 40:1,6 40:20 42:4 44:2 53:2 141:2 147:4,20 153:1
principles 175:10	proceeding 187:3	progression 100:4	provide 61:1 71:21,25,25 184:13
printed 17:6	proceedings 6:6 10:5,11,16 218:9 226:24 227:12	progressive 78:19,23 79:1 79:10,11 80:21 81:4,8,23 82:4 82:8,11,18,19 85:13,17 87:11 87:15,19 89:16 89:19 91:22	provided 59:9 62:23 65:15 66:5,21 67:10 227:6
prior 17:21 41:7 54:1 73:5 129:19 159:1 177:7	proceeds 93:8 process 84:1,4 95:3,23 97:19 100:20 101:1 112:9 118:11 168:1 189:9	progressively 45:23 46:11,20 46:23 47:4,20 47:25 48:8 49:5,19 52:2 54:20 55:4	providing 66:25
priority 72:11	processing 108:20	proper 57:7,18 153:5 203:7,7 211:11	ptab 66:2
privilege 7:12 13:7 225:8	produced 227:11		public 227:10 230:4,7
privileged 13:24 222:3,19	product 59:14 59:15,18,21 60:3 61:9		publication 75:24
			publicly 40:2
			purported 218:7
			purposes 66:14 148:8 220:9

put 40:19 54:19 64:12 100:2 116:17 118:2,7 123:17 126:17 129:20 159:8 159:12 208:9 211:7 212:10 212:21,22 213:11 putting 60:12 170:24 216:21	143:1,2 145:12 155:7 162:4,8 165:25 196:6 196:16 197:10 197:14 201:20 202:17 224:21 225:17,18,23 questions 71:17 225:24 226:11 226:19 quick 29:12 quickly 28:7 quite 22:9 31:22 quotation 20:10 34:21 134:14 quote 21:13 24:13 38:2,8 38:11 47:17,19 128:9,11 173:13,16 186:4 207:12 quoted 134:15 quotes 51:12 63:1 102:9,24 105:10 207:13 quoting 20:12 37:2 105:14 131:25 196:9	33:4 227:1 rabenstein 221:16 radford 44:17 45:9,17 46:1,9 46:24,25 47:2 47:12,23 48:5 48:25 51:13,15 51:20,23 52:10 52:15,17,17,21 53:17,18,20 54:16,23 55:1 55:9,12,14 radford's 49:7 raised 154:21 217:24 219:2 range 109:7 125:5 rate 23:7 98:11 98:11,12,17 101:2,3,4 103:5,10 104:6 104:21 105:4 106:3,18 107:2 107:6,9,11,20 108:14,20 109:8,14,19,20 110:11 111:7 111:22,24 112:1,4,23 113:1,3,11 115:7 117:14 117:15,16,21 117:23 118:1,3	118:5,8,13,14 118:20,22 120:11,13,16 120:18 121:6 121:13,20,23 122:16 123:14 125:7,13,15,16 125:19 126:11 126:21,21 127:11 128:17 128:19 129:1,6 129:15,21 130:14 131:3,3 131:6 133:4,6 135:22,23 136:23 158:18 158:24 159:1,3 159:9,12 163:25 164:2,3 164:6 166:11 166:12,20,22 167:4,5,7,17,20 167:22 168:5,9 170:10,11,17 175:2 187:10 187:22 188:5 189:9 204:4 205:8 207:22 207:24,25 208:2 209:6 210:6,7,10,17 211:4,5,7,8,10 211:12,14,21 212:5,10,11,18
q			
qualifications 7:6 qualities 38:15 quality 18:10 19:1,10 24:17 24:20 25:6 45:11,15,18 46:10 47:1,24 48:6 49:1,7 51:16,24 52:4 52:11,22 54:16 54:24 96:1 question 8:7 10:7 14:24 15:8 22:1 29:12 36:1,25 38:9 42:2 53:23 54:1 72:21 73:1 97:7,24 112:12 124:17 134:12	r r 3:11 5:1 23:13 23:24 25:18,20		

212:20,23	128:21 131:16	83:17 88:11,14	147:21 149:13
213:2,12,24	131:23 132:14	97:24 101:6	149:16 151:21
214:15,22	134:9 136:11	120:6 139:4	208:24
rates 108:12	150:4,10 157:5	157:16 161:25	receipt 231:17
110:13 117:5	157:14 169:14	172:10 178:15	receive 23:16
117:19 127:13	171:25 177:15	187:5	26:17 27:11,14
129:18 160:13	177:19 179:11	realtime 29:13	27:16 28:7,23
161:4 166:25	186:16 189:13	227:3	32:8 88:13
181:25	194:23 197:1	rearranging	89:3,24 95:16
rather 103:4	197:12,19	216:10	216:17,19
104:5 136:20	201:8,25	reason 46:8	received 84:11
207:4 210:21	204:12 206:21	139:13 141:8	84:23 87:3,12
ratio 19:23	207:10 208:7	193:13 202:7	88:8 89:6 94:4
23:25 24:2,7	216:14 217:16	206:6 211:15	94:25 112:1,8
25:18 31:10	223:8 224:21	211:16 213:8	118:20 167:25
33:1,7,8	224:24 225:1	228:5 231:11	198:8,14
ratios 25:18	229:24 231:9	reasonably	207:25 216:18
read 8:8 11:21	readily 174:6	207:2 210:19	receives 216:4
14:13 16:1	181:2	reasons 45:17	receiving 89:10
17:15 18:6,18	reading 31:19	57:19 63:11	94:24 198:11
19:5,14 21:24	40:23 47:9	85:18 103:12	215:6
22:11 24:9	51:2 53:7 54:4	103:14 117:3	reception 22:19
42:23 44:23	54:6 67:25	137:24,25	28:5
45:3 46:17	79:6 81:5 86:1	154:23 156:1	receptions
47:15 48:13	90:13,15,17	163:17 166:14	23:22 26:16
51:8 58:11,12	114:11 115:5	210:4	recess 29:16
59:4 62:2	118:23 120:11	reba 221:14,16	34:15 74:10
64:24 77:3	162:5 174:2	rebuttal 106:13	119:8 156:16
79:4 80:12	195:14	recall 9:15	193:25 200:14
83:24 91:12	reads 149:25	15:19 44:16	224:19 226:17
98:2,3,5	155:25	66:13 67:13	recited 145:1
100:11 105:20	realize 136:13	70:22 73:22	recites 45:22
110:19 114:16	really 31:13,16	74:3 79:8	reciting 47:6
120:4 124:20	33:8 48:4 50:3	80:16 81:1	95:25

recognize 6:1 75:25 166:18	redo 112:9 168:1	26:8 34:24 36:8 42:18	refers 24:6 84:5 105:3 111:2,18
recollection 56:20 66:18	reduced 23:20	51:19 56:18,24	112:22 114:1
reconfiguring 108:21	reexplain 41:15	62:13 70:19	116:12 121:2
record 8:4,5,8 8:16,17 14:4,5	refer 73:21	72:17,24 73:19	130:6 153:19
35:22 40:19	76:23 86:7	74:5 76:4 77:5	157:2 158:12
64:10 98:3	91:10 97:10	78:6 79:14,18	163:8,20 165:9
148:9 151:2	99:5 106:8,11	80:14 81:21	165:23 167:18
197:4,6,7	107:21 111:14	83:15 85:25	185:5 186:5
200:13 224:17	114:14 117:8	86:2,20 91:9	188:1,14
227:11,12	127:8,21,24	91:15,15 92:24	refilled 104:9
230:1	140:22 153:23	95:7 97:12	refills 209:7
recorded 227:6	154:19 159:15	98:15 99:25	reflect 64:10
recording	178:17,22	102:9,11,12	reflective 27:21
112:3 118:21	185:11 195:19	104:14 105:8	reflects 203:6
158:17,23	reference 76:5	105:10,15	regarding
160:17,21	138:8 179:23	106:21,22	14:21 217:7
161:21 167:16	203:10,12	108:22 114:10	218:3
167:20 170:16	209:18	115:4 122:12	regards 150:11
178:1 181:13	referenced	122:17,24	registered
182:15 190:16	231:6	123:22,25	227:2
191:2 208:1	references	130:24 131:22	regular 22:22
recordings	173:24	132:3,11,12	23:13 26:21,22
173:15 174:24	referred 23:24	137:23 165:4,7	27:4,7,19,20,23
175:15,18	24:1 31:24	169:24 175:2	29:2 32:7,8
182:7 183:2	37:18 79:9,24	175:13 178:7	184:13 187:10
185:20,21	81:2 85:20	180:21 181:24	187:10
190:12 214:3	111:7,8 113:6	183:7,13,16	rejection 46:1
red 100:6	113:17,18	186:23 188:13	relate 62:15
redirect 226:12	116:21 126:24	192:9 196:18	related 67:6
	136:3 157:23	201:18 207:14	164:13 217:8
	181:5 218:22	207:16 208:14	218:9 227:13
	referring 21:21	209:10,15,21	relating 15:4
	22:3,15 25:23		19:13 114:19

194:21 relation 220:1 relative 227:15 relied 57:16,17 66:20,22 67:16 113:4 127:6,17 relies 175:10 rely 17:7 56:7 57:1,14 113:5 127:16 172:5 relying 35:23 36:5 43:17,23 122:19 172:8 180:18 190:8 192:5,12,13 remainder 81:12 83:12 85:7 90:6 95:10 remarks 39:1 remember 70:1 72:7 79:18,24 79:24 112:12 131:21 132:2 143:22 147:16 149:17 161:8 177:4 193:19 210:11 221:10 221:14 remembered 67:14 remove 205:22 removed 204:5 205:9 206:3	removing 205:13 209:25 render 57:18 repeat 10:7 14:24 22:1 97:6,24 124:17 142:25 143:1 197:14 221:22 repeatedly 64:11 rephrase 143:2 reply 156:10 200:3 219:3 replying 103:2 173:3 206:2 repopulate 159:2 report 9:22 16:13 139:23 157:23 158:3 159:17 reporter 1:22 144:10 148:3 161:14 227:2,3 227:23 represent 36:22 89:7 representing 161:20 request 28:4 29:24 31:12 33:6 49:16 160:24	requested 8:8 98:3 204:6 205:10 206:4 227:23 requesting 27:19,22 30:6 43:7,7 45:24 46:12 47:20 48:1,8 49:5,9 49:19 52:2,4 54:20 55:4,7 requests 27:15 27:23 28:7,9 28:11,18,21 29:2,5,8,10,22 32:7,20 33:10 34:9 49:12 require 109:7 125:6 126:10 131:2 138:23 140:4 142:10 142:14 143:18 144:3 146:11 152:12 164:4 166:24 167:2 167:10 211:20 215:6 required 46:12 50:24 102:1,6 103:9,19,21 104:19 108:20 119:24 151:17 168:5 170:23 203:20 204:20	205:17 206:12 206:13 211:19 214:21 215:16 requirement 126:7 139:7 requires 115:7 141:15,22 142:4 166:10 requiring 164:9 reread 8:6 reset 106:24 108:2,3,13,21 108:22 110:10 110:23 111:16 112:15,19,24 113:9,10 116:15,24 117:3,11,12,13 117:18 118:6 124:25 126:19 127:1,14 129:10,22 135:20 159:11 164:1,4,9,14 166:24 170:8 170:12,23 210:13,13 211:9 212:11 212:17,19,24 213:2,12 resetting 109:7 110:12,16 111:6 112:17
---	--	--	---

113:1 116:7,19 117:22 118:12 125:6 126:10 131:2 159:1 167:2,10 211:19,20 212:2,5 213:20 214:21 resolution 57:11,12 resolutions 43:10 respect 12:16 12:19 42:11 45:16 65:9 107:16 138:11 140:13 147:18 150:24 151:18 152:10,17 157:22 161:23 161:25 162:14 166:21 168:7 173:10 174:20 175:11 177:12 179:14,22 208:17 213:23 respectfully 51:15 respond 219:3 responding 103:7,17 158:9 163:13 203:25 204:7 205:14 206:2	response 19:6 26:18 27:12,14 28:23 32:8 45:11,19,22 49:2 51:17 52:1,8 55:1,19 57:24 63:9 157:16 176:23 180:12 responses 27:17 28:8,12 29:6 49:12,13 59:13 61:2,3,7 61:13 62:24 65:16,17,20,20 66:3,6 67:11 70:11 responsive 10:14 45:6,25 46:13 54:22 156:2 157:24 166:5 responsiveness 48:4 rest 48:2 134:5 result 32:25 105:25 106:2 106:17 107:10 120:17 121:12 159:11 170:4 resulted 108:12 results 114:20 115:19	retained 223:6 return 156:18 231:13,16 returning 101:21 reveal 220:16 222:1,18 224:9 revealing 8:20 222:2,22 224:12,17 revert 23:13 review 4:12 7:9 7:23 13:5 74:16 149:1 201:4,8 227:23 231:7 reviewed 7:16 7:24 8:22 11:20,23 14:12 14:17 66:21 220:18 reviewing 9:8 9:25 richard 219:20 219:21 right 6:9,19 7:2 10:22 12:5,14 12:25 13:2,3 13:11 15:14 18:5 25:1 28:8 29:18 30:10 34:25 35:1 38:4 40:7,13 47:19 58:23,24	60:8 70:24 73:24 74:7 75:4 76:12,15 77:21 78:1 79:13 80:6,8 86:10,17 92:13 93:22 95:18 96:10 97:4,9 97:22 100:5 109:24 113:23 114:15 115:1 119:3,6 122:21 123:5 127:7 128:21 129:3 130:15 131:24 132:3 137:11 144:20 149:7 151:5 159:1 166:8 167:21 169:19 171:19 173:17 180:1 180:14 184:17 194:6,16 195:6 196:4 199:18 207:7 212:12 221:15,17 225:15 rmr 1:22 227:21 roman 78:13 romanette 7:3 room 223:19 roundtrip 112:10 168:2
---	---	---	---

row 99:13,13 100:23 132:22 159:18 168:18 rpr 1:22 227:21 ruggieri 1:22 227:2,21 run 107:1,19 109:13 121:5 125:12,23 running 121:19 123:12 128:25 129:20 130:13 216:1	25:21 30:17 34:6 112:25 113:2 115:18 117:4 159:3 163:25 164:3 167:4,5 211:7 211:8,10 212:10,10,20 212:22,23 213:11 sampling 34:2 105:4 107:2,20 108:14 109:8 109:14,19 110:10,11,13 111:7,11,12 113:10,13 116:16 121:6 121:20,22,22 122:16 123:13 125:6,13,15,19 126:11,15,21 129:19 131:3,3 164:10 166:25 212:17 213:24 satisfactory 227:7 230:4 saw 14:11 109:2 111:13 113:16 saying 11:7 16:15 22:17 28:19 29:10 31:8 32:3	33:15 34:7 40:22 41:17 45:17 46:2 47:8 53:3 54:14 59:8,17 60:16,18,24 61:1,25 63:21 70:4 71:10,23 72:22 73:11 77:20 82:15 83:1,19 88:20 92:14,19 95:8 103:1,21 110:3 115:10,11 122:23 123:3 124:1,7 125:22 126:4 128:10 141:15,21 145:14,14,18 145:24 146:6 147:21 151:11 151:15,19 152:4,5,7,9 160:18 161:1 166:4 172:4,7 173:5 178:15 186:10,21 195:13 198:7 205:11,21 206:3,8 208:5 209:22 210:2 215:20 224:5 225:12	says 5:5 18:1 19:8 22:6 24:15 25:4 26:7,19 27:8 28:24 31:21 32:4 38:19,25 39:1 40:7,12 46:3 62:10 63:4 81:22 85:12 86:4 87:20 89:14,14 89:15 98:9 100:25 104:2 106:16 108:25 109:12 122:9 125:1,10 126:11 133:19 136:1 139:24 141:17 142:1,4 143:17 148:22 156:25 159:25 160:4 161:16 165:21 168:19 173:9,18 175:7 177:10 184:12 184:15 187:18 189:9 191:11 196:23 200:1 205:3,4 206:6 207:9 208:11 scanning 179:21 scenario 43:4 215:22
s			
s 4:8 5:1 23:9 23:11 33:2 safety 19:4,18 sample 57:10 57:10,12 110:5 113:15 116:8 123:15,18,20 124:23 125:21 125:25 126:1,2 127:13 135:23 212:1 sampled 109:20 111:23 117:25 125:16 131:5 159:9 167:7 170:25 210:17 samples 20:1 23:5,18 25:19			

scope 40:21 42:10 43:21 51:4 53:9 54:8 55:25 56:4 70:18 71:14 72:16 83:23 130:17 140:18 141:3 142:24 143:6 147:15 173:2 193:11 second 20:17 24:14 41:1,2 78:7 102:4 132:22 165:17 171:3 177:24 178:18 196:15 197:4 199:6 215:24 secondary 60:18 217:1,7 217:22 218:7 218:13 219:4 seconds 29:25 32:11 92:7 98:13,15 100:17 199:5,8 199:9,12 section 24:24 31:19 44:12,14 44:20 47:10 51:2 53:7 72:18,21 73:4 78:12 82:1 85:19 86:4	88:11,17 97:4 97:8 103:13 104:25 105:22 109:4 121:25 122:1,21,22 127:18,24,25 128:24 130:3,4 130:19 138:12 138:15,16 153:14 160:15 178:17,23,24 180:15 181:5 194:4,19,20 195:5 196:17 204:14 206:10 213:25 216:25 217:5 sections 26:9 127:21,22 153:19 154:12 154:19 see 5:18 6:24 9:9,24 12:7 15:11 16:3 17:23 20:24 21:19 30:8,20 34:22 37:25 42:25 44:4,10 50:10,11 58:19 65:17 66:2,9 68:21 71:3 75:11,13 76:21 79:14 80:5,17 91:1,4,23 92:1	92:20 94:5 96:4 100:16 101:15,23 102:2 131:18 132:6,8 137:18 143:9,10 144:18 145:3 148:21 157:10 160:1 164:21 168:21 169:2,8 171:15,20 174:3,11,12 179:13 180:1 186:2,8 193:13 194:12,17 195:22 196:17 200:23 201:7 203:21,22 205:6 206:20 211:2 215:8,11 216:7 217:3,9 217:21 seeing 67:14 91:8 143:22 seem 150:16 seems 30:24 31:4 89:12 143:24 176:10 224:14 seen 14:15 68:15 101:11 179:22 208:3 sees 92:15 210:24	segment 27:1 28:18 29:3 30:5 33:2 57:11 segments 29:3 select 13:4,17 45:15 54:24 selected 13:10 selecting 47:23 48:5 49:1,7 51:13,16 selection 46:2 51:23 55:9 send 26:23,24 28:9,17 29:8 29:24 33:5 sending 23:12 27:3,6 29:2,5 29:22 32:6,10 33:6,9 34:9 sense 9:11 78:20 204:7 205:2 214:20 sent 22:21 23:8 26:21,22 27:20 28:21 32:20 160:24 231:14 sentence 17:25 25:2 31:20 53:15 58:16,25 71:1,3,6 78:7 92:10 93:24,25 106:1,15,20 137:14 149:23
--	---	--	---

156:25 159:24 160:1,4,15,22 162:5,23 163:10 164:18 165:15,21 171:15 175:14 177:24 184:8 194:15 215:12 215:21 separate 146:12 187:8 222:13 separately 37:14 221:19 224:3 sequence 187:1 187:3,4 188:19 188:21,22 198:3,20 199:2 199:4,24 sequentially 19:16 197:23 serial 198:2,17 199:7,8 serialized 198:19 serially 198:14 session 225:20 set 77:25 150:20 sets 77:14 setting 30:24 settings 109:7 125:5	setup 100:24 100:25 shared 11:14 17:17 18:22 62:7,10 90:23 sheet 228:3 231:11 sheng 3:13 221:16 shift 40:24 103:5,10 104:6 104:21 106:3 106:18 107:11 115:8 120:18 121:13 166:11 166:12 168:9 204:4 205:8 209:6 210:6 211:13 shifting 38:14 shifts 39:1,7 40:7 41:21 43:8 short 34:14 156:14 226:13 226:16 show 14:8 67:9 100:4 138:22 142:13 144:6 154:2,14 175:9 176:22 177:2 201:18 showed 42:12 57:8	showing 100:15 shown 41:8,24 92:4,13 132:18 shows 139:13 140:3 146:10 152:10 153:20 sic 100:24 side 219:25 sign 231:12 signal 110:5 signals 109:23 172:14,17,18 173:19,20 195:10,11,16 195:17 signature 6:11 74:20,22 149:7 201:1 227:20 228:3 signature's 6:22 signed 230:2,5 231:19 similar 66:23 154:21 170:3 170:20 185:7 similarly 109:21 simpler 177:25 181:12 190:15 simply 49:9 52:21,24 53:18 55:13 158:25 207:3 210:8,19	simultaneously 49:9 55:7 150:13 single 10:16 84:11 88:13 89:6,10 91:23 92:21,23 94:4 94:11,20,25 95:16 184:4 187:22 situation 27:18 30:12 41:10 89:19 93:7,19 94:15 110:9,21 111:5,15 112:16,18 113:6,19 114:2 116:20 120:10 121:2,10,17 129:4 133:17 135:3,5,6,14,15 136:10,16,25 137:1 159:7 162:1,14 167:9 170:7,9 175:24 176:11 188:14 211:24 situations 88:14 89:23 94:18 95:14,15 116:6 136:12 six 197:24 sixth 62:6
--	---	--	--

size 84:18,25 85:22 86:5 87:2,5,25 88:7 88:18,23 91:17 92:24 93:6 113:15 123:15 123:19,20 125:21 126:1,1 126:2 skill 38:12,20 39:6,20,24 40:18,23 42:9 47:9 51:2 53:6 54:3,5 82:10 82:14 99:18 110:3 111:1,16 112:21 113:25 114:5 116:10 134:20 136:18 138:1 152:24 157:1,11 158:11 163:6 163:18 165:22 166:18 174:6 181:1 186:12 192:1 195:14 skipped 204:5 205:8 slightly 11:3 42:1 146:13 smaller 28:8,10 88:24 smooth 150:1 150:16 151:3	software 143:25 214:18 solution 81:18 83:5 90:11 188:16 189:3 189:16 190:3 212:1 solutions 231:23 solving 62:16 186:22 187:16 somewhat 27:21 sorry 7:1 10:7 12:6 14:24 35:25 53:13 58:23 74:21 79:11,11 81:15 88:16 90:16 91:8 97:15 98:23 102:19 102:19,20 125:2,3 132:1 134:11 137:6 155:6,18 156:24 158:1 164:23 179:25 183:14 191:20 192:23 193:8 195:23 196:6 197:14 208:20 210:2 216:21 sort 67:12 143:24	sound 106:25 107:18 108:13 108:17,18 109:5,13,24 110:24 112:19 121:5,19 122:15 123:13 125:4,11 126:7 126:8,10,19 127:1,15 128:25 129:11 129:20 130:13 135:21,22 159:11 166:23 166:24 167:9 168:6 170:6,8 210:13,15 211:3,9 212:7 212:11,16,19 213:1,22 sounds 90:13 soundtrack 190:14 source 22:22 spans 76:9,10 78:5 speak 32:1 71:16 speaking 219:23 specific 178:23 193:16 specifically 108:10	specification 17:14,18 18:22 19:20 20:3,13 21:15 22:6,12 22:16 25:24 26:2,4,7,9 27:8 38:21 39:16 40:1 62:7,8,11 62:17 63:5,19 63:24 78:21 79:9 82:14 87:15 90:17 91:16 153:1 166:23 specifications 11:14 82:5 147:19 150:21 177:11 specifics 149:18 speculation 65:4 67:23 70:18 71:14 130:17 142:24 146:23 spelled 5:14 spent 66:12 202:8 spoke 137:24 spoken 219:6 219:13,20 staging 19:4,16 stalls 67:6,7,11
---	---	---	---

stand 9:1,20,21 159:14 201:8 202:2,20	67:8 68:13,24 69:19 72:1 141:24 142:6	steps 86:21 93:16 99:15 100:13 101:7 102:12 105:5 164:13 167:2	streamed 45:19 46:6,10 47:24 48:6 49:2,8,25 51:16,18,24,24 52:5,11,12,22 54:17,24
standard 177:13 178:11 184:9,12	142:18 147:1,2 176:24 230:1	stepup 95:23 97:19 98:19,20 99:2,6,9,12,20 99:23 101:5,18 105:12 157:25 159:18 163:16 166:8,8 167:12 167:13 168:25 169:1,22,24 170:4,21 209:19	streaming 128:19 204:16 206:11
standards 175:25 183:22	states 1:1 steady 26:23	stenographic... 227:6	streamlet 23:12 24:18 26:18,23 26:24,25 27:11 27:16 28:23 41:2,2 49:12
stands 8:2	step 18:12 90:25 91:1,3 92:4,13,14,19 93:8,14,15,18 100:17,19 102:1,6,24 103:9,19,21 104:20 105:19 110:16 114:22 114:25 115:5 118:6 119:25 120:2 133:25 157:18,22,25 158:5,8 159:18 163:15 164:8 166:7,21 167:11,12 168:8	stereo 105:5 109:22 111:11 113:13 123:15 123:19 125:21 125:23,24,25 126:16 135:24	streamlets 19:3 19:15 23:11 26:20 27:14 28:11,14 49:10 55:8 215:7
start 7:6 23:8 78:24 100:21 177:24 183:9 188:4 190:2 198:11,12	started 53:3 189:23	sticker 148:21	street 1:18 2:6 2:16 3:3
starting 24:12 57:11 77:25 105:24 174:23 177:13 178:9 181:11 184:21 214:1	starts 106:23 121:3 188:7,9 194:5 195:1	stopped 208:18	strengths 81:7
state 5:11 17:20 26:23 195:6	stated 56:6 152:17,21	stored 19:3 204:3 205:7	strictly 101:7
statement 38:8 40:17 42:4	stepdown 169:6,25 170:3 170:20	storing 69:6	strike 53:25 162:19
statements 56:24 57:8	stepping 161:24,24 170:5,6,6	strategy 225:10 225:19,23	struggling 30:21
		stream 45:10 47:1 72:14 73:15 128:11 133:6 215:25 216:2	studor 150:12
			stuff 99:8 123:14
			sub 77:14 78:1 84:11,14,18,23 84:24 85:22 86:5 87:1,1,4

87:12,25 88:6 88:8,13,18,23 89:2,4,10,24 91:17 92:24 93:6,17 94:4 94:11,20,25 95:16 111:3,19 112:1,3,5,6,7 112:22 114:2,7 115:1 116:13 118:20,22,24 157:3 158:13 158:17,23 163:9,21 165:24 167:17 167:24 170:17 175:21 176:3 176:12,16 177:13 178:6 178:13 181:21 182:3,12,21 187:8,19,25 188:4,8,14 189:5,17,20,21 190:5,21 191:4 191:9,22 195:3 198:6,8,10,14 199:22 204:3 205:7 207:3,6 207:23,25 208:2 209:25 210:20,22 211:22 214:8 214:13,23	216:2,4,6,11,18 216:20 subject 226:10 submit 149:15 submits 51:15 submitted 75:2 139:17 156:7 218:3 223:10 submitting 149:13 177:7 subscribe 230:1 subsection 78:18 137:9 subsequent 49:12 120:7 substantial 81:15,16 83:3 90:9 substantially 22:10 32:4 150:1 151:4 success 185:12 successive 22:19,19 23:22 26:16,17 27:11 27:16 28:17,22 34:6 185:12 suddenly 22:9 31:22 32:17 sufficient 175:21 176:11 182:11,20 191:4	suggesting 202:6 suggests 61:18 suit 72:12 suite 2:16 summarized 40:16 summary 24:24 25:11 53:18 67:3 92:6 summing 23:4 30:16 supplemental 6:4 15:20,23 17:11 34:18 41:16 57:24 58:5 64:19,20 66:14 70:21,23 76:16 82:1 95:19 97:15 101:21 114:12 119:17 137:5,7 156:1,12,18 161:7 165:5 171:11 180:10 180:24 185:25 194:3 195:24 200:16 201:11 201:14 213:6 215:1 supplemented 158:1,4 supplied 181:19,23	supplies 174:10 174:15 181:4 supply 192:12 supplying 109:18 125:14 support 4:11 38:8 59:10 61:1 62:24 65:16 66:6 70:4,11 71:25 74:15 103:13 148:25 216:9 supported 68:24 126:2 supporting 118:4 140:8 supports 69:19 suppose 153:19 167:13 supposed 62:14 sure 12:6 15:1 29:14,22 35:11 50:9 56:23 72:20 73:3,10 79:18 90:23 92:18 104:1 106:10 138:7 147:25 156:15 179:5,5 193:23 194:7 202:23 212:8 222:11 223:19 224:16 224:18,23
---	---	---	--

suspend 160:23	178:1 181:13	193:15,18,21	124:19 129:9
suspended	184:17 190:16	220:25 221:5	129:14,17
226:25	195:8,9,15	223:15 224:14	150:12 161:9
sustain 118:2	214:3	226:8,13,15	163:10 167:10
sustainable	systems 175:25	taken 51:21	173:8 175:20
96:2 128:20	178:10 184:20	154:22 229:24	178:16 180:22
133:6	184:24 185:1	talk 42:19 67:4	181:9 186:23
sustained 19:1	191:6	71:21 77:13	186:24 196:23
24:21	t	86:13 105:25	197:21,22
switch 107:7	t 4:8 29:4,5,6,9	128:25 138:10	201:15 203:12
120:13 127:13	29:22,25 30:3	147:25 157:19	209:4,8 214:1
129:18 167:4	30:4,8 32:11	177:1,23 184:8	talks 25:2,15
170:12 200:7	32:12,12,13,14	184:10 194:11	44:20 62:6
212:5	32:15,21,22,24	194:11 203:11	73:5 84:17
switched	33:6 227:1,1	224:2,4,14	91:16 104:25
108:12 161:4	tab 5:20,22,24	talked 44:17	109:4 128:4
switching	5:24 74:12,13	72:3,18 109:15	164:25 167:13
107:9 120:16	74:18 76:17	127:5,9 140:7	168:18 178:10
127:11 129:6	96:9 200:19	140:7 163:5	178:23 182:6
129:15 168:6	table 7:2 12:10	181:10 185:3	185:20 186:25
170:11 175:1,2	12:18 15:16	190:11 206:9	187:14 197:22
175:2,17	16:13,17,22,25	talking 9:16	198:1 209:23
181:24,25	217:18,21	20:3 22:13	210:5
187:9 188:5	219:25	25:9,12,12	taught 123:11
189:10 207:22	tables 12:23	26:4 28:19,21	123:23 129:16
211:21 214:15	13:2 15:12	41:25 49:23	135:17 136:10
214:22	take 20:15	52:15 54:22	136:25
sworn 5:4	28:11,14 29:12	68:8 70:25	teach 215:16
227:9	34:14 46:15	73:22 77:9	teaches 41:12
system 45:9	58:10 65:13,14	78:22 80:2	43:11,19 84:16
91:4 106:2,17	73:10 74:7	84:2 88:17	87:25 89:23
107:11 120:17	99:23 119:7	97:16 101:7	116:21 154:16
121:12 145:7	156:14 192:10	108:3,5 122:1	154:23 164:6,7
172:16 173:19		122:14 124:12	171:6 174:19

182:19 188:11 189:6,24 198:5 204:16 206:10 207:21 211:25 212:16 214:10 216:10 teaching 46:24 46:25 89:20,21 113:8 118:1 123:17 124:2 124:22 127:4 127:11 129:4 133:22 134:19 135:1 154:2 158:7,21 159:7 167:15 170:15 170:19 186:11 190:1 195:15 207:19 213:3 teachings 118:17 135:11 168:4 172:13 173:11 176:7 187:18 191:14 192:11 technical 67:3 67:4 technique 82:22 176:15 190:7 techniques 175:23 technologies 1:9 2:11 81:7	231:4 technology 81:4 82:17 87:16 telecom 219:7 tell 8:21 27:4 51:12 53:4,8 53:14,15 78:25 155:8 162:22 185:13,13 telling 13:16,24 27:8 64:4 154:10 temporal 209:4 ten 30:6 74:8 tend 23:13 term 24:13 41:4 62:11 82:7,8,11 138:2 146:20 183:11 184:19 184:22 199:16 200:1 204:8 terminal 188:24 terms 17:6 39:25 122:17 171:1 terrain 150:12 150:15 test 100:16 133:15 135:12 136:14	testified 202:12 testifying 64:11 138:5 testimony 9:1 62:22 65:14 66:4,20,25 70:10 201:21 231:9,17 testing 135:8 136:21 text 6:23 48:3 48:24 91:16 96:16 98:9 thank 5:15 10:1 21:6 80:11 144:11 thanks 59:6 thereof 62:12 thereto 227:16 thetaup 19:11 19:12 25:7 26:6 thing 43:25 49:20 86:2 116:25 124:1 127:10 140:12 169:13 183:12 183:16 191:25 things 31:15 32:16 33:14 57:14 67:17 69:8 80:2 140:23 151:7 174:20 181:23	192:3 think 6:9 9:11 9:13 14:10,17 15:11 16:11 20:25 21:1 22:12,14 23:14 29:10 30:20 35:1 37:17,21 41:14,16 45:25 46:13,21 47:17 47:18 55:4,5 55:22 56:19 57:15,17 60:8 65:9 66:23 67:7,24 68:13 69:12,24,24,25 70:3,4 76:1,17 79:13 80:23 81:1,20 82:13 84:1 85:12,15 86:1,20 89:12 89:15 92:8,25 96:5,10 98:20 99:7,17 102:5 102:11 104:13 104:24,24 105:1,13 106:8 107:14,17 110:2,25 112:14 115:9 115:16,19,21 115:23 116:7 118:6,11,16 120:24 121:3
---	---	---	--

124:1 127:8,23 128:22 132:21 132:24 138:6 139:17 140:14 141:19,23 143:13,20 144:4,9,17 150:10,12,17 151:7 152:17 155:22 156:5 159:17 160:8 161:6,8,11 163:1 172:2,6 173:3,21 174:18,21 175:3,3,5 176:20 184:25 185:6 186:24 186:24 191:18 191:21,23 194:7 196:16 196:19 197:9 198:16,22 199:20,23,25 202:3 204:10 208:13,24 209:10,20 210:14,23 218:11,20,22 219:1 224:13 thinking 72:10 72:25 109:2 115:22	thorough 203:8 thought 73:8 three 7:4 10:4 10:11,15 35:9 36:3 37:5,18 62:8,9,9 76:2 101:14 202:10 223:12 threshold 19:11,12 20:5 20:6 24:19 25:7 26:6 thresholds 25:10 tied 72:20 87:13 89:11 108:18 117:5 time 16:22 19:18 22:14,18 22:19 26:15 27:10,15 28:10 28:13,22 29:4 30:3 33:2 38:15 39:3,9 40:10,10 41:23 43:11 53:2 59:5 66:12 67:14 70:15 71:10 72:6,11 73:15 82:12 84:9,15,20,20 85:1 86:6,10 86:11 87:2,6 88:2,7,19,24	89:7,7 91:6,11 91:18,24 92:22 94:2,12,18 98:13,16 103:5 103:10 104:5 104:13,20 112:10 115:7 119:2 150:14 152:24 153:8 156:7 157:9 166:10,12 168:2,9 184:23 192:21 193:6 195:21 196:11 196:23,24 197:17 198:10 198:12,12,15 199:3,6,8,9,16 199:17,21,23 202:8 204:4 205:8 216:5,19 216:19,20 220:23 222:5,7 225:19 231:18 timeframe 231:8 times 26:17 27:11,16 28:4 28:5,23 30:6 32:24 timing 28:10 titled 206:10 today 201:15 202:12 203:13	220:6,10 today's 7:8 8:23 220:13 together 28:13 57:22 153:25 154:22 208:10 took 221:3 top 77:12,13,19 77:25 83:2 99:9 160:14 173:18 179:9 193:12 total 161:20 totality 64:20 86:24 89:25 totally 136:15 towards 132:7 144:24 tp 84:15 85:23 86:10,12 91:5 91:11,24 92:7 92:15,16 93:3 93:13 94:22,23 100:17 track 67:5 117:14 trademark 1:1 transcript 104:2 227:11 227:23 229:24 230:1 231:6,19 transcripts 68:4 69:17
--	--	---	--

transmission 112:10 168:3	121:25 149:5 149:20 159:22	under 96:24 97:13 99:14,18	111:1,17 112:21 113:25
transport 73:23	200:3 203:16 206:17	99:21 100:8 105:12 115:21	114:6 115:10 115:17 116:11
trial 1:3 147:11	turning 31:18	159:18 163:15 163:16 166:8	117:20 118:17 138:1 149:25
tribunal 15:17	twisted 151:8	167:12 168:17 168:17 169:1,6	151:2,5 153:5 156:10 157:1
tribunals 14:21 15:4,9	two 7:4 11:10 32:15 37:8,11	169:22 170:3,4 170:20,21	158:12 160:8 162:9 163:7
trigger 19:11 19:12 20:5,6	42:20 58:21 62:25 81:7	171:2 209:19 230:2	165:22 166:1 169:23 174:7
25:7 26:6 52:10 93:6	87:10 141:6 142:6,18	underflow 107:5 123:1	181:2,2 199:16 202:19 209:16
trouble 71:17 219:24	188:17 222:13 222:14	128:14 133:11 133:14,16,18	209:21 214:16 215:3,15
true 60:16,19 93:12 94:13	type 82:3 99:17 types 57:14	134:17,21,24 135:7,14,15	217:23 understanding
138:25 155:23 227:11	59:24 71:22 190:25	136:13,14,15 137:1	31:5,23 39:23 71:7 90:24
try 74:4 203:3 203:8	typically 203:4 typo 9:9,24	underflowing 135:5	92:12 152:6,22 153:10 196:9
trying 30:22 36:7,18 57:3	22:13 108:24 109:2 110:1	undersigned 230:4	196:21 understands
60:11,20 69:9 71:9 201:20	typos 201:7	understand 11:6 30:21,22	116:19,24 195:14 206:1
202:11,24 210:23	u	35:25 38:13 39:7,15,18	understood 29:23 60:9
tuesday 221:4 223:14	u 5:14 ultimately 50:15	40:18 42:9 45:8 50:22	113:21 115:16 133:9 157:12
turn 11:19 19:24 21:18	unchanged 178:6 190:21	56:2,10 82:15 85:10 91:3	162:23 163:18 169:12 207:2
34:19 44:7 58:2 75:6	214:9 unclear 64:5	94:10 99:18 103:20 110:3	210:14,19 212:8
76:20 90:20 119:10,13	103:17		

undesirable 112:9 168:1 undisrupted 137:17 141:12 unexpectedly 151:22 unidentified 3:14 uninterrupted 58:22 59:2,12 60:1,7,15 61:9 61:15,23 63:2 63:11,16,23 64:8 65:2,11 65:19 66:8 70:13 137:11 137:17 138:24 140:5 141:10 141:16,22 142:5,11,15,20 144:4 146:11 146:21 147:13 150:2 152:12 155:3 unit 30:3 united 1:1 units 199:4 universe 17:2 146:25 universes 147:8 unpack 77:16 unquote 128:15 unrelated 18:13	unwilling 162:22 upscaling 126:16 upshift 19:9 24:17 25:5 upshifting 18:1 18:9,23 95:22 use 21:10 45:6 75:7 111:10 165:14,16 175:23 189:20 199:25 used 10:18 41:4 42:10 43:1 71:11 82:8,11 143:10 172:16 173:19 176:15 183:3,11,20 184:22 189:9 195:3,9 209:13 231:19 user 3:14 45:9 45:18 46:4,9 46:25 49:16 52:10,21 54:15 54:23 70:15 71:11 72:13 98:14 99:11 150:17 160:12 160:14,16 161:19 168:18 215:24	user's 18:3,11 18:16 31:1 33:17,21 usercommand 168:20 uses 20:4 62:10 62:11 164:25 184:19 using 38:3 42:15 89:16 105:3,3 110:22 129:18 150:14 187:15 201:13 204:8 205:2,3 209:3 214:18 usually 101:12 142:19 143:4,9 143:10,14,15 v v 1:8 231:4 variation 22:17 32:23 62:12 various 67:5 68:3 83:18 vary 22:10 32:4 32:16 venable 3:1 venable.com 3:6 231:2 verify 231:9 veritext 231:14 231:23	veritext.com 231:15 version 177:25 178:2 181:12 181:14 190:15 190:17 214:4 video 38:14 39:4,10 40:11 41:23 48:17 49:22 50:3,12 52:24 55:17 67:15 72:6 96:1 107:16 128:11 142:20 143:4 145:21 146:3,9 150:14 151:23 172:13 172:16 173:15 173:19 174:9 174:16,20,24 175:12,15,20 178:3,4 181:14 181:16,17 182:2,7 183:1 185:16,20 190:12,13,18 190:20 191:2 191:17 195:9 195:16,16 204:16 206:11 211:18,20,23 213:4,18,18,19 213:21 214:3,5 214:7,12,13,17
---	--	--	--

214:21 videos 213:23 view 24:8 47:8 51:1 73:14 78:15 79:1 95:24 120:1 138:25 145:6 169:11 205:12 211:1 viewing 45:12 45:19 49:2,3 49:24 51:17 52:8,19 54:15 55:2,14,19,20 215:25 vii 78:14 vii.a 86:4 vii.a. 85:19 virtual 221:8	64:12 80:5 90:23 130:14 160:19 177:1 192:10,19 193:15,18 196:8 200:3 201:18 202:21 224:16 wanted 9:7 20:23 69:13 154:6 washed 31:16 washington 2:7 2:17 watched 70:15 watching 45:13 watkins 1:17 2:13 way 31:16 49:6 52:3 66:19 77:19 79:7 82:7,9 133:9 135:24 136:13 142:8,17 153:5 156:3 164:8 181:24 182:14 185:15 187:16 198:6,18 210:24 211:1 213:19,21,22 ways 183:1 214:11 we've 34:13 46:22 193:19	203:12 208:3 wednesday 1:16 week 221:4 weight 218:14 went 100:8 west 3:3 whiting 219:20 219:21 williams 2:4 4:6 5:8 7:14,20 8:3,6,10,15,18 13:9,14,22 14:3,6 20:19 29:14,17 34:16 35:7,13,24 36:6,12,15,21 36:24 58:8 74:11 98:1 119:3,6,9,17 144:14 148:6 148:17 150:8 156:13,17 162:19,21 193:21 194:1 197:5,8 200:9 200:12,15 224:18,20,24 225:7,12,22 226:4,7,20,22 wilson 2:5 21:5 wishes 160:17 wit 230:5	withdraw 38:9 155:6 withstand 62:18 63:6,20 63:25 withstanding 62:19 witness 4:3 5:3 7:12 8:7,13 13:7,21 36:7 36:25 220:15 221:25 222:18 224:8 225:5 227:6 228:1 231:8,10,12,18 wo98/26604 186:7 word 42:25 45:6 61:16 62:25 80:21,24 143:9,13,15 147:12 154:13 165:16 177:5 183:3 207:13 207:14 wording 209:13 words 20:9 54:4 58:21 64:12 105:11 152:23 153:3 154:7,13 165:14 215:11
w			
wait 133:14 212:3 waiting 81:14 82:23 83:1,7 83:14,20 84:6 85:4,5 90:3,8 95:5 209:6 waits 81:10 83:8 104:8 want 7:24 26:23,24 30:10 35:10 44:11 45:18 46:9			

work 213:19,21 213:23 worked 149:16 works 77:24 156:4 world 147:7 worth 220:23 writing 70:22 written 64:2,5 64:14,17 71:18 159:15 163:3 202:20 wrong 64:25 155:7 168:11 216:24 wrote 152:16 153:8 154:8 155:1,9,13,16 156:7 165:5	102:4 103:25 125:3 136:7 140:6 145:5 161:10,13 175:7 179:5 180:23 183:9 183:15 190:1 193:3 194:17 196:3,3,8,13 197:5 200:12 202:6 208:9 215:20 yellow 102:16 yesterday's 221:9 york 3:4,4	225:3,9,16 226:2,15,18 231:1 zoom 3:9,14
x	z	
x 4:1,8	zeros 110:7 197:24,24,25 zimmerman 3:2 200:6,11 201:16,23 202:16 203:1 205:24 207:17 212:15 213:15 215:9,18 216:12 217:14 219:9,15,22 220:8,14,21 221:1,6,15,20 221:24 222:9 222:17 223:3 223:17 224:6	
y		
yanka 1:6 3:7 223:11 yeah 5:23 17:17 30:3 36:6 38:1,17 39:22 60:8 73:20 74:25 75:13 79:21 81:3 86:14 90:16 91:14 92:11 96:16		

Federal Rules of Civil Procedure

Rule 30

(e) Review By the Witness; Changes.

(1) Review; Statement of Changes. On request by the deponent or a party before the deposition is completed, the deponent must be allowed 30 days after being notified by the officer that the transcript or recording is available in which:

(A) to review the transcript or recording; and

(B) if there are changes in form or substance, to sign a statement listing the changes and the reasons for making them.

(2) Changes Indicated in the Officer's Certificate.

The officer must note in the certificate prescribed by Rule 30(f)(1) whether a review was requested and, if so, must attach any changes the deponent makes during the 30-day period.

DISCLAIMER: THE FOREGOING FEDERAL PROCEDURE RULES ARE PROVIDED FOR INFORMATIONAL PURPOSES ONLY.

THE ABOVE RULES ARE CURRENT AS OF APRIL 1, 2019. PLEASE REFER TO THE APPLICABLE FEDERAL RULES OF CIVIL PROCEDURE FOR UP-TO-DATE INFORMATION.

VERITEXT LEGAL SOLUTIONS

COMPANY CERTIFICATE AND DISCLOSURE STATEMENT

Veritext Legal Solutions represents that the foregoing transcript is a true, correct and complete transcript of the colloquies, questions and answers as submitted by the court reporter. Veritext Legal Solutions further represents that the attached exhibits, if any, are true, correct and complete documents as submitted by the court reporter and/or attorneys in relation to this deposition and that the documents were processed in accordance with our litigation support and production standards.

Veritext Legal Solutions is committed to maintaining the confidentiality of client and witness information, in accordance with the regulations promulgated under the Health Insurance Portability and Accountability Act (HIPAA), as amended with respect to protected health information and the Gramm-Leach-Bliley Act, as amended, with respect to Personally Identifiable Information (PII). Physical transcripts and exhibits are managed under strict facility and personnel access controls. Electronic files of documents are stored in encrypted form and are transmitted in an encrypted

fashion to authenticated parties who are permitted to access the material. Our data is hosted in a Tier 4 SSAE 16 certified facility.

Veritext Legal Solutions complies with all federal and State regulations with respect to the provision of court reporting services, and maintains its neutrality and independence regardless of relationship or the financial outcome of any litigation. Veritext requires adherence to the foregoing professional and ethical standards from all of its subcontractors in their independent contractor agreements.

Inquiries about Veritext Legal Solutions' confidentiality and security policies and practices should be directed to Veritext's Client Services Associates indicated on the cover of this document or at www.veritext.com.