

Page 1

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

TESLA, INC.,	
Petitioner,	Case IPR2024-00630
V.	U.S. Patent
iQAR INC.,	No. 10,850,616
Patent Owner.	

ORAL AND VIDEOCONFERENCED DEPOSITION OF
DAVID BEVLY, PhD
FEBRUARY 26, 2025
(Reported remotely.)

ORAL AND VIDEOCONFERENCED DEPOSITION OF
DAVID BEVLY, PhD, produced as a witness at the instance
of the Petitioner, taken in the above-styled and
-numbered cause on the 26th day of February, 2025, A.D.,
beginning at 12:02 p.m. CST to 1:46 p.m., before Kelly
Hassell, RPR, CLR, CSR, in and for the State of Texas,
located in Auburn, Alabama, in accordance with the
Federal Rules of Civil Procedure and the agreement
hereinafter set forth.

DIGITAL EVIDENCE GROUP
1730 M Street, NW, Suite 812
Washington, D.C. 20036
(202) 232-0646

1 R E M O T E A P P E A R A N C E S

2 FOR THE PETITIONER:

3 MR. RYAN CHOWDHURY, ESQ.

4 Fish & Richardson, P.C.

5 500 Arguello Street

6 Suite 400

7 Redwood City, California 94063

(650) 839-5070

8 rchowdhury@fr.com

9

10

11 FOR THE PATENT OWNER:

12 MR. K. PATRICK HERMAN, ESQ.

Orrick Herrington & Sutcliffe, LLP

13 51 West 52nd Street

New York, New York 10019

14 (212) 506-3596

pherman@orrick.com

15

16

17

18

19

20

21

22

23

24

25

1

I N D E X

2

Direct Examination by Mr. Chowdhury..... Page 4

3

4

5

6

EXHIBITS

7

EXHIBIT NO.	DESCRIPTION	PAGE
-------------	-------------	------

8

Exhibit 1004	United States Patent	12
--------------	----------------------	----

9

Number 8,712,650

10

11

Exhibit 2001	Declaration of	8
--------------	----------------	---

12

David M. Bevly, PhD

13

14

15

16

17

18

19

20

21

22

23

24

25

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

2 THE COURT REPORTER: The time on the
3 record is 12:02 p.m. Central Time. If counsel could
4 please state their appearances for the record.

5 MR. CHOWDHURY: Sure. It's Ryan Chowdhury
6 from Fish & Richardson on behalf of Petitioner, Tesla.

7 MR. HERMAN: This is Patrick Herman from
8 Orrick Herrington & Sutcliffe here on behalf of Patent
9 Owner.

10 THE COURT REPORTER: I'm Kelly Hassell,
11 Certified Shorthand Reporter, located in Dallas, Texas.
12 The witness is located in Auburn, Alabama.

13 (The witness was duly sworn.)

14 THE COURT REPORTER: Thank you. You may
15 proceed.

16 MR. CHOWDHURY: Thank you.

17 DAVID BEVLY, PhD,
18 having been first duly cautioned and sworn to testify the
19 truth, the whole truth and nothing but the truth,
20 testified on his oath as follows:

21 DIRECT EXAMINATION

22 BY MR. CHOWDHURY:

23 Q Good afternoon, sir. Could you please state
24 your full name for the record.

25 A David Mark Bevly.

1 Q Hi, Dr. Bevly. My name is Ryan Chowdhury, and
2 I represent Petitioner in the Inter Partes, or IPR
3 proceeding relevant to today's deposition. That IPR
4 number is 2024-00630, which is pertinent to U.S. Patent
5 Number 10,850,616. I'll refer to this proceeding as the
6 '616 IPR, and the relevant patent as the '616 patent.

7 Before we get started, could you please
8 let me know if you -- what documents you have brought
9 with you to this remote deposition?

10 A Yes. So I have my declaration. So I have a
11 printout version of my declaration. I have the '616
12 patent that you referenced. I also have Patent
13 8,712,650, or patent application, so we refer to it as
14 the Koebler650. And I have Dr. Morellas' expert report.
15 I also have what we refer to as Paper 7. Basically this
16 is, I believe, the board's decision on IPR. And
17 that's -- that's it.

18 Q And these documents have no annotations,
19 markings or notes in them, correct?

20 A No, they're clean copies.

21 Q Have you previously been deposed?

22 A On -- on this exact -- do you mean generally or
23 on this -- on this exact issue? Or...

24 Q How many times have you been generally deposed
25 in the --

1 A Oh, generally deposed, it's about eight times.

2 Q And given your experience, I just wanted to
3 refresh your understanding of how today's deposition will
4 be conducted, just to make sure we're on a level playing
5 field. Is that okay with you?

6 A That is fine.

7 Q And so you understand you've taken an oath?
8 Yes?

9 A Yes.

10 Q And that oath requires you to tell the truth,
11 the whole truth and nothing but the truth, correct?

12 A Yes.

13 Q And you'll hear -- you'll do that here today?

14 A Yes.

15 Q Great. And it is important that we try not to
16 talk over one another. So if you give me the courtesy to
17 get my questions out, I'll extend the same courtesy to
18 you in responding completely.

19 Can we agree on that?

20 A Yes.

21 Q And it's especially true in these remote
22 depositions because there's a -- there may be a little
23 bit of lack of clarity when someone is finished speaking.
24 So I will try to do my best not to step on your toes; is
25 that okay?

1 A Yes.

2 Q And if you don't ask me to clarify a question,
3 is it fair to say that you have a reasonable
4 understanding of what I am asking?

5 A Yes.

6 Q And since the questions and answers are being
7 typed by the court reporter, I just ask that you audibly
8 answer every question. So a nod of the head is not
9 sufficient. We would need a yes in that case, in that
10 instance. Do you understand?

11 A I do.

12 Q Your attorney Mr. Herman may pose objections
13 from some -- from time to time for some of my questions,
14 but unless he expressly instructs you not to answer, you
15 understand that you are obligated to give an answer given
16 the oath you've provided, correct?

17 A Yes.

18 Q I will try to take a break about every hour or
19 so just to give everyone a chance to get up and take bio
20 breaks and do whatever they need. If at any point you
21 need to take a break during the deposition, will you just
22 let me know?

23 A I will.

24 Q And the only thing I ask is if there is a
25 question pending and absent an attorney/client assertion

1 that you answer the question before we take a break.

2 Can you agree to that?

3 A I agree.

4 Q Is there any reason why you can't provide your
5 best, most accurate testimony here today?

6 A There is not.

7 Q So there is no medication that would impair
8 your ability to testify?

9 A I am not taking any medication.

10 Q Let's turn to Exhibit 2001, which is your
11 expert report or declaration in the '616 IPR. I'll
12 upload this document into the chat so you'll have a
13 chance to open it electronically. And just let me know
14 when you have that document open.

15 (Exhibit 2001 marked.)

16 A I have the printed copy in front. Do I need to
17 open the one -- the one you provided as well or...

18 Q (BY MR. CHOWDHURY) Whatever is easiest for
19 you.

20 A I think I'll rely on the printed copy unless I
21 need to search something but...

22 Q Sure.

23 So if you could just turn to Page 48 of
24 your declaration.

25 A Yes.

1 Q And that's your signature on this page?

2 A It is my signature.

3 Q And you signed this on December 19th, 2024,
4 correct?

5 A Yes.

6 Q And you reviewed this declaration in preparing
7 for today's deposition?

8 A I have.

9 Q Do you have any corrections that you want to
10 make to your declaration at this time?

11 A Nothing substantial. I did see one typo, but
12 it was just a left off letter.

13 Q Anything else?

14 A Nothing else.

15 Q Could you -- let's go to Paragraph 42 of your
16 declaration, and just let me know when you're there.

17 A I'm there.

18 Q In Paragraph 42, your declaration states that,
19 quote, "In my opinion, the terms of the '616 patent's
20 claims do not require further construction and can be
21 afforded their plain and ordinary meaning for purposes of
22 the analysis of the prior art that I am conducting in
23 this declaration."

24 Did I read that correctly?

25 A Yes.

1 Q So just to confirm, your opinion is that the
2 claims do not need specific definitions, correct?

3 A Correct.

4 Q Let's go to Paragraph 76 of your declaration,
5 and just let me know when you're there.

6 A I am there.

7 Q In Paragraph 76, your declaration states that
8 "Koebler650 does teach that one of the claimed sensors --
9 in particular, a 'position sensor' -- is used when
10 determining temperature, weather, wind direction, wind
11 velocity, air pressure, location of stoplights, and
12 timing of stoplights."

13 Did I read that correctly?

14 A Yes.

15 Q And when you say Koebler650, you're referring
16 to U.S. Patent Number 8,712,650, which I believe is
17 Exhibit 1004 in this proceeding, correct?

18 A Correct.

19 Q I'll similarly refer to this document
20 throughout this deposition as Koebler or Koebler650.

21 A That is fine.

22 Q So my question for you, Dr. Bevly, is where
23 does Koebler650 describe analyzing position sensor data
24 to determine weather-related conditions?

25 A Well, as I discuss in the report, it discusses

1 using telemetry data or external data to gather
2 information about weather, and that weather is to
3 understand what is around the vehicle or at the vehicle.
4 And so therefore, a position sensor -- so in Koebler650,
5 basically it talks about determining the weather
6 conditions or the stoplights or traffic lights around the
7 vehicle.

8 And so therefore, if that information is
9 coming from a general map database, you would use your
10 position sensor to determine where on that map database
11 you're located in order to combine that information with
12 the position sensor to determine these things.

13 Q And I appreciate that explanation.

14 Where -- which paragraph in Koebler650 do
15 you see that description?

16 A So in my report, I believe I reference
17 Column 3, let's see, Lines 50 through -- so it's on
18 Line 50, 51, 52, 53, 54 Koebler650, Column 3. It says
19 "the weather around the vehicle, present wind direction,
20 predicted wind direction for upcoming route segments,"
21 which require knowing my position in terms of that
22 information.

23 Q Let's turn to Exhibit 1004, which is
24 Koebler650. I'll upload this document into the chat, and
25 just let me know when you have it available to you.

1 (Exhibit 1004 marked.)

2 A I have it, again, in written form.

3 Q (BY MR. CHOWDHURY) Great. If you could turn
4 to the paragraph in Koebler650 that starts at Column 3,
5 starting at around Line 41.

6 A Okay. I'm there.

7 Q There's no description in this paragraph of
8 analyzing position sensor data, correct?

9 MR. HERMAN: Objection; form.

10 A Again, as I've stated, so it's -- it is
11 discussing determining information around the vehicle,
12 which would require knowledge of the vehicle's position.

13 Q (BY MR. CHOWDHURY) Where do you see that in
14 Column 3, paragraph -- the paragraph that starts at
15 Column 3, Line 41?

16 A So that paragraph continues to Line 54 where it
17 says "the weather around the vehicle, the present wind
18 direction, the present wind velocity," which would
19 require knowledge of where the vehicle is located. And
20 so a POSITA basically would understand -- a person of
21 ordinary skill in the art would understand that in order
22 to use this information, to determine the conditions
23 surrounding the vehicle, the traffic -- it also mentions
24 on Line 51 the traffic surrounding the vehicle -- that I
25 would need to know my position in order to do that. So I

1 would use a position sensor to determine this information
2 around -- around the vehicle, the current vehicle.

3 Q Do you see a reference to position sensor in
4 this paragraph?

5 A There's not a specific reference to a position
6 sensor. It does say the position of the sun, but again,
7 a person of ordinary skill in the art would understand
8 that in order to determine that information, I would need
9 to know my position to get the information around the
10 vehicle.

11 Q Do you see any description of analyzing sensor
12 data collected by a position sensor in this paragraph?

13 MR. HERMAN: Objection; form.

14 A Can you repeat the question, please?

15 Q (BY MR. CHOWDHURY) Do you see any description
16 of analyzing sensor data collected by a position sensor
17 in this paragraph of Koebler650?

18 A Right. As -- as I mentioned before, I believe
19 that it is inferred that in order to determine these
20 things around the vehicle, I would have to use -- I would
21 have to determine my position in some form.

22 Q So you would agree with me that in this
23 paragraph there's no express description of analyzing
24 position sensor data, correct?

25 A I'll agree with that.

1 Q And you would agree with me that Koebler650
2 states that weather information can be received from a
3 weather service?

4 A Yes.

5 Q And --

6 A As one -- as one method of receiving. So one
7 of -- one of the ways, yes.

8 Q And that's described in the paragraph starting
9 at Column -- Line 8 -- Column 8, Line 12, correct?

10 A Yes. So in -- in Column 8, 20, it lists
11 several ways the information could be obtained. It
12 mentions and/or weather sensors, but it also says in some
13 variations, from an external -- from a -- you know, from
14 an external database.

15 Q So in this paragraph, Koebler650 describes how
16 it's power management device receives information inputs,
17 correct?

18 A Some of the information inputs, yes.

19 Q And what is your understanding of the
20 information inputs that are -- that are referenced in
21 this paragraph?

22 A In this paragraph? So it mentions time. It
23 mentions optical sensors that it could use for sunlight,
24 distance to vehicles. It mentions weather sensors for
25 getting temperature, wind direction, velocity. It

1 mentions, in some variations, getting telemetry data,
2 which would provide similar weather-type information, map
3 services, traffic service, et cetera.

4 Q So there's a variety of sensors that are
5 described in this paragraph, correct?

6 A Yes.

7 Q And you don't see a position sensor being
8 listed as one of those sensors in this paragraph, right?

9 A Not explicitly in that paragraph, no.

10 Q Around the last line, which is Line 22,
11 Koebler650 describes that "power management system
12 receives some of this information by telemetry with
13 off-board information sources such as databases and the
14 like."

15 Do you see that?

16 A I do.

17 Q And you would agree with me that when
18 Koebler650 refers to this information, it's referring to
19 the information inputs in the earlier part of the
20 paragraph, right?

21 A Yes.

22 Q And as an example, Koebler 56 -- Koebler650
23 says the power management system may communicate with a
24 weather service, a map service, and a traffic service.

25 Do you see that?

1 A Sorry. Repeat that.

2 Q As an example, Koebler650 says the power
3 management system may communicate with a weather service,
4 a map service, and a traffic service.

5 Do you see that?

6 A I believe so, but can you tell me which lines.
7 I don't see it repeated exactly as you read it.

8 Q Sure. It's Line 22 of Column 8, near the
9 right, the sentence starts "For example, the power
10 management system may communicate with a weather service,
11 a map service, and a traffic service, et cetera."

12 A I see that now, yes.

13 Q You don't see any description referring to the
14 analysis of information communicated from the weather
15 service in this paragraph, do you?

16 MR. HERMAN: Objection; form.

17 A In the paragraph as a whole, it mentions using,
18 for example, the optical sensor to determine intensity of
19 light, distance to vehicles, temperature and wind
20 direction, you know, above it. So in terms of analyzing
21 the sensors to determine some of these things, I believe
22 that it discusses that above that sentence.

23 Q (BY MR. CHOWDHURY) But the sensor data that's
24 described in the earlier part of the paragraph, that's
25 different from the information that's received from the

1 weather service, correct?

2 A Some of the data is similar as to what could be
3 received from the weather service.

4 Q There's no description in this paragraph of
5 analyzing the information that's received from the
6 weather service, correct?

7 MR. HERMAN: Objection; form.

8 A Again, not explicitly, but I believe that above
9 it's describing analyzing the sensors to determine some
10 of this information, and then says some of the
11 information could also be received from the power
12 management, you know, from a weather service. Therefore,
13 a POSITA reading this would see these are ways to analyze
14 the sensor data to get this information, or some of this
15 information could be provided from the weather service.
16 So a POSITA would understand that as not having to detail
17 explain again how to analyze that data because they've
18 done it in the few sentences above.

19 Q (BY MR. CHOWDHURY) And you would agree with me
20 that communication of weather information from a weather
21 service is not the same thing as analyzing sensor data
22 samples to determine weather-related information,
23 correct?

24 MR. HERMAN: Objection; form.

25 A Yeah, sorry. Can you repeat the question?

1 Q (BY MR. CHOWDHURY) You would agree with me
2 that communication of weather information from a weather
3 service is not the same thing as analyzing sensor data
4 samples to determine weather information, correct?

5 MR. HERMAN: Same objection.

6 A By itself, that sentence -- by itself, yes,
7 I'll agree.

8 Q (BY MR. CHOWDHURY) And you would also agree
9 with me that the communication of traffic information
10 from a traffic service is not the same thing as analyzing
11 sensor data samples to determine traffic information,
12 correct?

13 MR. HERMAN: Objection; form.

14 A With the same stipulation as I stated
15 previously, yes.

16 Q (BY MR. CHOWDHURY) Let's turn now to
17 paragraph -- the paragraph of Koebler650 starting at
18 Column 21, around Line 29. And let me know when you're
19 there.

20 A Tell me again. Where?

21 Q Column 21, starting at Line 29.

22 A Okay. I am there.

23 Q Okay. So now around Line 47, near the right,
24 Koebler650 states "weather (e.g., wind direction and
25 velocity, rain, sun, snow, et cetera)."

1 Do you see that?

2 A I do.

3 Q So here Koebler650 describes rain as an example
4 of weather information, correct?

5 A Yes.

6 Q Rain is not the same thing as moisture, right?

7 MR. HERMAN: Objection; form.

8 A Well, rain is moisture, I guess, so rain is
9 moisture falling from the sky.

10 Q (BY MR. CHOWDHURY) A measurement of rain is
11 not the same thing as a measurement of moisture, correct?

12 MR. HERMAN: Objection; form.

13 A It gives an indication that there is moisture
14 around.

15 Q (BY MR. CHOWDHURY) And what is your
16 understanding of moisture?

17 A Moisture is information that the windshield or
18 car or road is wet, which happens when it's raining.

19 Q So just to confirm, your understanding of
20 moisture is information that a surface is wet?

21 A Or that there's water present.

22 Q And Koebler650 doesn't describe determining
23 moisture information from rain, does it?

24 MR. HERMAN: Objection; form.

25 A Repeat the question, please.

1 Q (BY MR. CHOWDHURY) Koebler650 doesn't describe
2 determining moisture information from rain, does it?

3 MR. HERMAN: Objection; form.

4 A Sorry. Not directly from rain, no.

5 Q (BY MR. CHOWDHURY) If you could turn back to
6 the paragraph of Koebler650 starting at Column 8,
7 Line 12. And just let me know when you're there.

8 A You said Column 8?

9 Q Column 8, Line 12.

10 A Okay. I am there.

11 Q There's no description in this paragraph
12 relating to any example of rain, correct?

13 A It mentions visibility, which visibility is --
14 is diminished during rain. It mentions weather. One
15 example of weather is rain. So not explicitly rain, but
16 I believe there's, again, information about, you know,
17 visibility, weather.

18 Q There's no description in this paragraph of
19 analyzing sensor data to determine rain, correct?

20 MR. HERMAN: Objection; form.

21 A To determine rain specifically, no.

22 Q (BY MR. CHOWDHURY) Could you now turn to --
23 turn back to the paragraph of Koebler650 starting at
24 Column 21, Line 29. And just let me know when you're
25 there.

1 A 21 -- Column 21, Row -- Row 9?

2 Q 29.

3 A 29. Okay.

4 Q There's no description in this paragraph of
5 Koebler650 relating to any example of rain, correct?

6 MR. HERMAN: Objection; form.

7 A Sorry. So we're in Column 21, Line 29?

8 Q (BY MR. CHOWDHURY) Yes, that's right.

9 A And if you can repeat your question, please.

10 Q There's no description in this paragraph
11 relating to any example of rain, correct?

12 MR. HERMAN: Objection; form.

13 A Well, rain is mentioned. We just looked at it.
14 Rain is mentioned explicitly in Line 48.

15 Q (BY MR. CHOWDHURY) And in referring to rain as
16 an example of weather, do you see any description of
17 analyzing sensor data to determine moisture information?

18 MR. HERMAN: Objection; form.

19 A Again, as I've stated before, no, not directly
20 moisture but they are related.

21 Q (BY MR. CHOWDHURY) And as you've testified
22 here earlier today, rain and moisture are related but
23 they're not the same thing, correct?

24 MR. HERMAN: Objection; form.

25 A They can be different.

1 Q (BY MR. CHOWDHURY) Okay. Let's turn now to
2 your declaration, specifically Paragraph 106. And let me
3 know when you're there.

4 A Paragraph 106?

5 Q That's correct.

6 A I am there.

7 Q In the first line of Paragraph 106, your
8 declaration states "Although Koebler650 doesn't expressly
9 disclose determining the amount of vibrations, it does
10 discuss using this information -- using information about
11 the "terrain" and the "condition of the road," and a
12 POSITA would have known this can be assessed using
13 vibration measurements."

14 Did I read that correct?

15 A Correct, yes.

16 Q Sir, your opinion is that Koebler650 does not
17 describe determining the amount of vibrations, correct?

18 MR. HERMAN: Objection; form.

19 A I believe that it does describe determining
20 vibration, as I've discussed here. It does not
21 explicitly state vibration, but it does describe
22 understanding the road conditions, which part of the road
23 condition and terrain is the vibration or the amount of
24 roughness of the road.

25 Q (BY MR. CHOWDHURY) What is your understanding

1 of an amount of vibration?

2 A So vibration is a change in position, and so
3 amount of vibration would be an amount of change of
4 position, so a magnitude of the difference of variation
5 in position. And that position can be translational, up
6 and down, but it can also be rotational, so angular --
7 angular velocity. Change in angular position can also
8 be -- can constitute vibration, and the -- the amount of
9 change of angular position would be the amount of
10 vibration.

11 Q And this understanding of vibration is not
12 described in the Koebler650 patent, correct?

13 MR. HERMAN: Objection; form.

14 A I believe, again, as a POSITA in this time
15 frame working in this field, that that -- that
16 explanation that I just gave would be well -- well known
17 for any person of ordinary skill in the art.

18 Q (BY MR. CHOWDHURY) And I appreciate that, but
19 I think my question was a little different.

20 Do you see a -- a description in
21 Koebler650 that provides the explanation of vibration
22 that you just provided?

23 A The explanation that I gave, no. It does talk
24 about change in terrain, change in grade, which those
25 are, as a POSITA would know it, change of position, which

1 is vibration.

2 Q And just so I understand your opinion, you
3 understand vibration to be an amount of change of
4 position?

5 A Yes. And that would -- that can be, again,
6 translational or angular.

7 Q And your opinion is that Koebler650 describes
8 using information that can be assessed through use of
9 vibration measurements, fair?

10 A Yes.

11 Q And these types of information include terrain?

12 A Terrain, road conditions.

13 Q Terrain is not the same thing as an amount of
14 vibration, correct?

15 A Change of terrain.

16 MR. HERMAN: Objection; form.

17 Q (BY MR. CHOWDHURY) And terrain is not the same
18 thing as an amount of change of position, correct?

19 A Terrain would describe change in position, so
20 if the terrain is flat versus if it's undulating, then
21 that's an amount of vibration.

22 Q So is it fair to say that they are correlated?

23 A They are.

24 Q But they're not the same thing?

25 MR. HERMAN: Objection; form.

1 A One would -- again, one could be used to
2 measure the other.

3 Q (BY MR. CHOWDHURY) A condition of a road is
4 not the same thing as an amount of vibration, right?

5 MR. HERMAN: Objection; form.

6 A Sorry. Repeat the question.

7 Q (BY MR. CHOWDHURY) A condition of a road is
8 not the same thing as an amount of vibration, correct?

9 A The condition of the road could include amount
10 of vibration.

11 Q So --

12 A So --

13 Q -- a condition --

14 A Sorry. If -- so, for example, roads are
15 oftentimes analyzed by their, quote, "roughness," which
16 is how much the road is moving up and down, which is a
17 measure of change of position, which is a measure of
18 vibration.

19 Q So a condition of a road is correlated with an
20 amount of vibration; is that fair?

21 A Yes.

22 Q But they're not the same thing?

23 MR. HERMAN: Objection; form.

24 A Not the same -- not exactly the same.

25 Q (BY MR. CHOWDHURY) And you would agree with me

1 that Koebler650 does not describe terrain as an example
2 of a vibration condition, right?

3 MR. HERMAN: Objection; form.

4 A Again, Koebler talks about change in terrain,
5 it talks about change in grade, and those are vibration.
6 Those are change in how the vehicle is going to pitch or
7 heave, and that is vibration.

8 Q (BY MR. CHOWDHURY) Let's turn to Koebler650
9 which is Exhibit 1004. If you could go to Column 13,
10 Line 57. And just let me know when you're there.

11 A Column 13?

12 Q Yes, that's correct. Around Line 57.

13 A My pages are somehow out of order. Let me fix
14 that. Okay. Column 13, Line 57.

15 Q On the left side of this line, Koebler650 uses
16 the term "terrain."

17 Do you see that?

18 A I do.

19 Q And Koebler650 says examples of terrain include
20 the gradient or condition of a road.

21 Do you see that?

22 A I do.

23 Q So Koebler650 describes two examples of
24 terrain, correct?

25 MR. HERMAN: Objection; form.

1 A It's two -- it lists two examples. They're not
2 all-encompassing, but yes.

3 Q (BY MR. CHOWDHURY) And those two examples in
4 this paragraph include the gradient of the road or the
5 condition of the road, right?

6 A Yes, yes. Sorry.

7 Q A gradient of the road is not the same thing as
8 an amount of vibration, correct?

9 MR. HERMAN: Objection; form.

10 A A change of gradient is.

11 Q (BY MR. CHOWDHURY) And I appreciate that
12 explanation. But a gradient of a road is not the same
13 thing as an amount of vibration, correct?

14 A But if I measure the change in gradient, that
15 is a measure of vibration.

16 Q So a gradient of a road can be correlated with
17 an amount of vibration; is that your opinion?

18 A Change in gradient. So if -- it's talking here
19 about understanding the gradient over different segments.
20 And so if that gradient goes from one degree to two
21 degrees to three degrees, that change, by understanding
22 the gradient of those segments, is a measure of
23 vibration.

24 Q A condition of a road is not the same thing as
25 an amount of vibration, correct?

1 MR. HERMAN: Objection; form.

2 A By itself, no. But as I mention in my expert
3 report, one of the ways to determine the condition of the
4 road is through measurement of vibration. In fact,
5 that's the way highway centers evaluate the roads.

6 Q (BY MR. CHOWDHURY) Is it fair to say a
7 condition of a road is correlated with an amount of
8 vibration?

9 A Yes.

10 Q You would agree with me that one way to
11 understand a gradient of a road is the slope or incline
12 of the road surface, correct?

13 A At -- at one point, yes.

14 Q For example, a road that rises 5 meters for
15 every 100 meters traveled has a 5 percent gradient,
16 right?

17 A Yes.

18 Q And in this example, this is an -- this is a
19 positive gradient, right?

20 A It depends on your sign convention, but yes, it
21 can be.

22 Q And another example is a road that drops
23 6 meters for every 100 meters traveled, that's a
24 6 percent gradient, correct?

25 A Yes.

1 Q And you would agree with me that this is an
2 example of a negative gradient?

3 A Using the same sign convention, yes.

4 Q Is it possible for a vehicle sensor to
5 determine the slope or incline of a road surface without
6 determining any vibration experienced by the vehicle?

7 MR. HERMAN: Objection; form.

8 A I believe -- I mean, it is possible, yes.

9 Q (BY MR. CHOWDHURY) And a condition of a road
10 is the same thing as a road condition, fair?

11 MR. HERMAN: Objection; form.

12 A Yes.

13 Q (BY MR. CHOWDHURY) And Koebler650 describes
14 examples of road conditions?

15 A It talks about determining road conditions,
16 yes.

17 Q So if you could turn to Column 13, Line 66.

18 A Yes.

19 Q And here, Koebler650 states "For example, as
20 the vehicle moves, the power management device may become
21 aware of changing road conditions, (for example, traffic,
22 weather, et cetera), or the user may change the route,
23 necessitating re-segmenting."

24 Did I read that correct?

25 A Yes.

1 Q So here, Koebler650 describes traffic and
2 weather as two examples of road conditions, correct?

3 A Correct.

4 Q Traffic is not the same thing as an amount of
5 vibration, right?

6 A No.

7 Q Weather is also not the same thing as an amount
8 of vibration, right?

9 A No.

10 Q Traffic information could be determined without
11 determining any vibration experienced by a vehicle,
12 right?

13 A Yes.

14 Q For example, traffic information can be
15 communicated to the vehicle from an external traffic
16 surface -- service, as explained in column -- in the
17 paragraph starting at Column 8, Line 12, correct?

18 A Correct.

19 Q And there's no description in that paragraph of
20 Koebler -- about determining an amount of vibration,
21 right?

22 A In which paragraph?

23 Q The paragraph starting at Column 8, Line 12.

24 A No.

25 Q Similarly, weather information can be

1 determined without determining any vibration experienced
2 by a vehicle, right?

3 A Yes.

4 Q For example, weather information can be
5 communicated to a vehicle from an external weather
6 service, as explained in paragraph -- in the paragraph of
7 Koebler650 starting at Column 8, Line 12, correct?

8 A Yes.

9 Q And do you see any description in this
10 paragraph about determining an amount of vibration?

11 A In Paragraph 8, no -- or sorry, Column 8, no.

12 Q Isn't it possible for vehicle sensors to
13 determine road conditions without determining any
14 vibration experienced by the vehicle?

15 MR. HERMAN: Objection; form.

16 A Well, road conditions can include many
17 different things, so they list here just two examples.
18 Those are not all-encompassing of all of the examples of
19 road condition.

20 Q (BY MR. CHOWDHURY) So it's possible to
21 determine road conditions without determining any
22 vibration experienced by a vehicle, correct?

23 A Well, it depends on which road condition you're
24 trying to determine. So one of the road conditions that
25 I discuss in my declaration is road roughness, and so

1 that road condition would -- would require -- would --
2 would utilize measuring the amount of vibration to
3 determine road roughness.

4 Q And this is how we know that a road condition
5 is not the same thing as an amount of vibration, correct?

6 MR. HERMAN: Objection; form.

7 A So I guess I'm not quite sure I understand the
8 question. A road condition can include many things. As
9 it mentions here, an example, traffic, weather, but can
10 also include the road roughness, which would be
11 determined by the -- by an amount of vibration, that
12 specific road condition. So road conditions is much
13 broader.

14 Q (BY MR. CHOWDHURY) Is it fair to say that some
15 types of road conditions can be measured without
16 determining any vibration experienced by the vehicle?

17 A Yes, I'll agree to that.

18 Q What is your understanding of rolling
19 resistance in the context of the '616 patent?

20 A So rolling resistance is an energy loss. So
21 the '616 patent is concerned about optimizing energy
22 loss. And so to understand or to measure or predict
23 energy, rolling resistance is one of the, again, energy
24 losses that comes through the tire, created through the
25 tire forces between the tire roads, so it's a tire road

1 interaction force that resists motion so detracts from
2 your efficiency.

3 I'm not sure if that's all you're looking
4 for or if you want even more details.

5 Q So if I understand your testimony, your -- your
6 understanding of rolling resistance is energy losses that
7 come through the tire, created through the tire forces
8 between the tire roads?

9 A I think that's a good summary. It's a -- it's
10 a force on the tire that opposes motion.

11 Q Rolling resistance is not the same thing as an
12 amount of vibration, correct?

13 MR. HERMAN: Objection; form.

14 A Not the same but related. The amount of
15 rolling resistance can be related to the roughness of the
16 road, which is -- can be measured by an amount of
17 vibration. So -- so road roughness vibration can affect
18 rolling resistance.

19 Q (BY MR. CHOWDHURY) And an amount of vibration
20 is not the same thing as energy losses created through
21 the tire, created through tire forces?

22 MR. HERMAN: Objection; form.

23 A Yes.

24 Q (BY MR. CHOWDHURY) Would you -- would you
25 agree with me that one way to understand a rolling

1 resistance of a vehicle is the force that opposes the
2 motion of a tire as it rolls on a surface?

3 A Yes.

4 Q A rolling resistance of a vehicle can be
5 determined by vehicle sensors without determining an
6 amount of vibration experienced by a vehicle, correct?

7 A Yes.

8 Q For example, a rolling resistance can be
9 isolated from other forces, like aerodynamic drag, by
10 measuring the power required to maintain a constant speed
11 on a level surface, correct?

12 A Well, the -- the amount of force to maintain a
13 constant speed will also include the aerodynamic drag.
14 So you'd have to isolate the tire by itself.

15 Q And as another example, a rolling resistance
16 can also be measured by using wheel sensors to measure
17 the torque required to maintain motion, correct?

18 A Yes, not trivial but...

19 Q Does a gyroscope measure vibration information?

20 A It can. So a gyroscope measures -- there are
21 two types. There are what are called Angular
22 gyroscopes which measure angular velocity, and so by
23 looking at -- by measuring the change in angular
24 velocity, that's a measure of vibration.

25 The other type are integrating gyroscopes,

1 which measure angle, but again, looking at the change of
2 angle over time gives a measure of vibration, of angular
3 vibration.

4 Q Do you see a -- sorry. Strike that.

5 Where does Koebler650 describe using a
6 gyroscope to measure vibration information?

7 A So state that question again.

8 Q Where does Koebler650 describe using a
9 gyroscope to measure vibration information?

10 A It does not explicitly talk about using a
11 gyroscope to measure vibration but the -- the
12 specifications in '650 talk about measuring -- you know,
13 measuring, again, as we talked about, change of grade,
14 those things, which are a measure of vibration that could
15 be measured with or would be measured with a gyroscope.

16 Q A change of grade is not the same thing as an
17 amount of vibration, correct?

18 MR. HERMAN: Objection; form.

19 A It is a measure of vibration, yes.

20 Q (BY MR. CHOWDHURY) Koebler650 doesn't describe
21 specific types of gyroscopes, does it?

22 A In terms of like angular rate versus
23 integrating that I mentioned, no.

24 Q Does a tire pressure sensor measure vibration
25 information?

1 A There are prior arts that -- that utilize tire
2 pressure sensor to measure vibration, yes.

3 Q Where does Koebler650 describe using a tire
4 pressure sensor to measure vibration information?

5 A Again, it does not explicitly mention that. It
6 talks about a tire pressure sensor, which those working
7 in the area would understand that as potentially one way
8 of measuring vibration.

9 Q Does a position sensor measure vibrations?

10 A A position sensor can be used to measure
11 vibration, yes.

12 Q Where does Koebler650 describe using a position
13 sensor to measure vibration information?

14 A Again, Koebler does not describe that
15 explicitly, but a POSITA would understand how to use a
16 position sensor to measure vibration.

17 Q Koebler650 does not describe using an inertial
18 measurement unit, correct?

19 A It does not explicitly call out an inertial
20 measurement unit, but it does mention gyroscopes, which
21 is a form of an inertial -- or a part of an inertial
22 measurement unit.

23 Q If you could turn to Column 21, Line 42 of
24 Koebler650, and let me know when you're there.

25 A 21 -- Column 21, Line 42?

1 Q That's right.

2 A Okay.

3 Q So on this line, around the middle,
4 Koebler '650 references examples of gyroscope
5 information, such as a vehicle's current orientation and
6 the current slope/grade of a road.

7 Do you see that?

8 A I do.

9 Q A vehicle's current orientation can be measured
10 without determining vibration experienced by a vehicle,
11 correct?

12 A Repeat the question.

13 Q A vehicle's current orientation can be measured
14 without determining vibration experienced by a vehicle,
15 correct?

16 A Correct.

17 Q And the current slope/grade of a road can also
18 be measured without determining vibration experienced by
19 a vehicle?

20 A Correct.

21 Q And in the paragraph of Koebler650 that we're
22 just looking at, which is the paragraph starting at
23 Column 21, Line 29, there is no description of using an
24 inertial measurement unit, correct?

25 MR. HERMAN: Objection; form.

1 A Again, it mentions measuring -- or gyroscope
2 information, which is a part of an IMU.

3 Q (BY MR. CHOWDHURY) How would you understand a
4 gyroscope and an inertial measurement unit?

5 A So inertial measurement unit basically measures
6 change in motion, and so there are several types of
7 inertial measurement units. There are gyroscopes; there
8 are accelerometers. A lot of times magnetometers are
9 included in the inertial measurement units. They also
10 sometimes include barometric pressure to measure change
11 in height.

12 Q So is it your opinion that an inertial
13 measurement unit, or an IMU, is a specific type of
14 gyroscope?

15 A A gyroscope is a type of IMU -- or is a subset
16 of an IMU. IMU --

17 Q Can you --

18 A IMU a little more general. A gyroscope is one
19 type of inertial measurement unit sensor.

20 Q Are there examples of gyroscopes that do not
21 have the sensing capabilities of an IMU?

22 A There are gyroscopes that are just the
23 stand-alone gyroscopes, so you can get just the
24 gyroscope. In automotive applications, that's pretty
25 rare, especially in this time frame.

Page 39

1 MR. CHOWDHURY: Dr. Bevly, we've been
2 going for about an hour now, so it could be a nice time
3 to take a break, a ten-minute break, if you would like.
4 We can do more if it's easier for you.

5 THE WITNESS: 10 minutes will be fine, so
6 we'll start back at 1:10 Central.

7 MR. CHOWDHURY: Sounds great.

8 THE COURT REPORTER: Off record at 12:59.

9 (Break taken from 12:59 p.m. to 1:11 p.m.)

10 THE COURT REPORTER: We are back on the
11 record at 1:11 p.m.

12 Q (BY MR. CHOWDHURY) Dr. Bevly, if I could just
13 ask you to turn back to your declaration on Paragraph
14 129, and just let me know when you're there.

15 A I am there.

16 Q So here, your declaration states that "A POSITA
17 would have understood that "traction" is a measurement of
18 the amount of power that is transferred from the engine
19 of the road, which is a function of the friction between
20 the vehicle's drive wheels (inaudible) surface."
21 (Inaudible).

22 A Yes.

23 THE COURT REPORTER: I'm sorry. You broke
24 up a little bit.

25 MR. HERMAN: Yeah, I missed a bit too.

1 You may -- you may want to read that again.

2 MR. CHOWDHURY: Yeah, sure.

3 Q (BY MR. CHOWDHURY) In Paragraph 129 your
4 declaration states that "A POSITA would have understood
5 that "traction" is a measurement of the amount of power
6 that is transferred from the engine of the road -- engine
7 to the road, which is a function of the friction between
8 the vehicle's drive wheels and the road surface."

9 Did I read that correctly?

10 A Yes, except it says measure instead of
11 measurement, but the same thing.

12 Q (BY MR. CHOWDHURY) Koebler650 does not define
13 traction, correct?

14 A It does not explicitly define traction,
15 correct.

16 Q So there is no description in Koebler650 of
17 traction being a measure of the amount of power that is
18 transferred from the engine to the road?

19 MR. HERMAN: Objection; form.

20 A Not explicitly.

21 Q (BY MR. CHOWDHURY) And -- and there is no
22 description in Koebler650 of traction being a function of
23 the friction between the vehicle's drive wheels and the
24 road surface, correct?

25 MR. HERMAN: Objection; form.

1 A Correct.

2 Q (BY MR. CHOWDHURY) Let's turn to Exhibit 1004,
3 which is Koebler650. If you could go to Column 4,
4 Line 3, and just let me know when you're there.

5 A I am there.

6 Q This paragraph provides examples of different
7 types of operational status information, fair?

8 A Fair.

9 Q And starting around Line 5, Koebler650
10 identifies certain examples, such as the vehicle's
11 current speed, the motor speed, the vehicle's current
12 orientation, and the rpm of the vehicle's motor.

13 Do you see that?

14 A I do.

15 Q And you would agree with me that the vehicle's
16 current speed, the motor speed, the vehicle's current
17 orientation, the rpm of the vehicle's motor are all
18 examples of operational status information, right?

19 A When you say "operational status," what do you
20 mean by...

21 Q I'm referring to the description in --

22 A Oh.

23 Q -- Koebler650, Column --

24 A Sorry. I --

25 Q -- (inaudible).

1 A Sorry. I see that now, yes.

2 Q You would also agree with me that it's possible
3 to measure a vehicle's current speed without measuring
4 the friction between the vehicle's drive wheels and the
5 road surface, correct?

6 A It is possible.

7 Q And the vehicle's current orientation can
8 similarly be measured without measuring the friction
9 between the vehicle's drive wheels and the road surface?

10 A Yes.

11 Q And the rpm of a vehicle's motor can also be
12 measured without measuring the friction between the
13 vehicle's drive wheels and the road surface?

14 A Sorry. Could you repeat that?

15 Q And the rpm of a vehicle's motor can also be
16 determined without measuring the friction between the
17 vehicle's drive wheels and the road surface, correct?

18 A Correct.

19 Q So turning back to Koebler650, starting at
20 around Line 7, Koebler650 identifies battery state, the
21 voltage of the battery, the amp hours from the battery,
22 and the state of the battery.

23 Do you see that?

24 A I do.

25 Q And you would agree with me that battery state,

1 the voltage of the battery, the amp hours from the
2 battery, and the state of the battery are examples of
3 operational status information, correct?

4 A Correct.

5 Q And you would also agree with me that a battery
6 state may be measured without measuring the friction
7 between the vehicle's drive wheels and the road surface,
8 correct?

9 A It may can be.

10 Q And a voltage of the battery may be measured
11 without measuring the friction between the vehicle's
12 drive wheels and the road surface, correct?

13 A Correct.

14 Q And the amp hours from the battery can also be
15 measured without measuring the friction between the
16 vehicle's drive wheels and the road surface, correct?

17 A Correct.

18 Q So Koebler650 describes examples of operational
19 status information that may be measured without measuring
20 friction between the vehicle's drive wheels and the road
21 surface, correct?

22 A It describes some that can be measured without
23 the friction.

24 Q What is your understanding of tire resistance?

25 A Rolling resistance?

1 Q Sorry. I'll restate the question.

2 What is your understanding of tire
3 resistance in the context of the '616 patent?

4 A Can you show me where it discusses tire
5 resistance in '616?

6 Q Sure. I'll refer you to the distinct
7 description in Koebler650.

8 Would you agree with me that Koebler650
9 has the same description as the '616 patent
10 specification?

11 A I believe it does.

12 Q Okay. So if you could go to Column 7, around
13 Line 38, there's a description of tire resistance in that
14 sentence -- in that line.

15 A Okay. So because there are -- there are places
16 where he specifically mentions rolling resistance, here
17 he uses the tire -- the term tire resistance, so I
18 believe that in this -- that tire resistance is basically
19 a little more generic. So it would include, you know,
20 all losses of the tire. These could include rolling
21 resistance but also slip, which would be traction losses,
22 in the system.

23 Q But just to confirm your opinion -- your
24 understanding of tire resistance in the context of the
25 '616 patent is all losses of the tire?

1 A Any tire -- any losses -- or any forces or
2 losses that oppose the motion of the vehicle, yes.

3 Q Tire resistance is not the same thing as
4 traction, correct?

5 MR. HERMAN: Objection; form.

6 A It could include, so I think a POSITA would
7 read that to be information about traction.

8 Q (BY MR. CHOWDHURY) If tire resistance includes
9 traction, it means that they're not the same thing,
10 correct?

11 MR. HERMAN: Objection; form.

12 A Ask that again.

13 Q (BY MR. CHOWDHURY) If tire resistance includes
14 traction, it means that they're not the same thing,
15 correct?

16 MR. HERMAN: Objection; form.

17 A Correct.

18 Q (BY MR. CHOWDHURY) And traction is also not
19 the same thing as all forces or losses that oppose the
20 motion of the vehicle.

21 A It is a subset or information about those
22 forces.

23 Q And because traction is a subset of tire
24 resistance, not all techniques of measuring tire
25 resistance involve measuring the friction between the

1 vehicle's drive wheels and the road surface, correct?

2 A I am not sure about that, like what methods
3 would be used.

4 Q Koebler650 doesn't describe determining tire
5 resistance as involving the measurement of friction
6 between the vehicle's drive wheels and the road surface,
7 correct?

8 MR. HERMAN: Objection; form.

9 A Again, not explicitly, but there is enough
10 information in the specification that a POSITA would from
11 using wheel rpm, using engine speed, that that difference
12 would be used to measure slip, which would be used to
13 measure road conditions including traction, as I discuss
14 in detail in the declaration.

15 Q (BY MR. CHOWDHURY) Could you point me to a
16 portion of Koebler650 that provides this description?

17 A Well, I detail it, again, in my declaration
18 where they mention engine rpm, wheel speed rpm sensors.
19 There's discussions of calculating the efficiency, which
20 is determined by the amount of traction and also, again,
21 the road conditions, which are dictated by co- -- things
22 like coefficient of friction.

23 So I don't know. Do you want me to find
24 each of those -- where it discusses the wheel speed, the
25 rpm, the engine speed. We looked at some of it just now.

1 Q Could you identify a specific paragraph of
2 Koebler650 that describes determining tire resistance as
3 involving the measure of friction between the vehicle's
4 drive wheels and the road surface?

5 A Not that explicitly, no.

6 Q What is your understanding of rolling
7 resistance in the context of the '616 patent?

8 A Rolling resistance is, again, forces that
9 oppose the motion of -- or forces that act against the
10 tire, the tires's rolling of the vehicle. I think we --
11 you had asked me that earlier, and I probably -- probably
12 did a little bit better job with the definition then.

13 Q So just so I understand your opinion, you
14 understand rolling resistance as forces that act against
15 the tire's rolling of the vehicle; is that correct?

16 A Of rolling -- the tire rolling. So the tire
17 rolling resistance is the forces basically resisting the
18 motion of the rolling of the tire, which then is also
19 acting on the vehicle. But specifically it is acting on
20 and through the tire.

21 Q If I could restate your testimony. The -- your
22 understanding of rolling resistance is forces that act
23 against the tire's rolling of the vehicle; is that
24 correct?

25 MR. HERMAN: Objection; form.

1 A Again, if that's what I stated earlier, I need
2 to clarify that.

3 The tire rolling resistance are the forces
4 that act opposing the motion -- the rolling motion of the
5 tire. The tire, of course, is attached to the vehicle,
6 so that force also gets transmitted to the vehicle. But
7 rolling resistance is specifically defined as the force
8 opposing the rolling motion of the tire or the wheel.

9 So if I stated of the vehicle, then that
10 was an incorrect definition by myself.

11 Q (BY MR. CHOWDHURY) So is it fair to say that
12 your understanding of the rolling resistance is forces
13 that oppose the rolling motion of the tire?

14 A Yes.

15 Q Rolling resistance is not the same thing as
16 traction, correct?

17 MR. HERMAN: Objection; form.

18 A They are -- they are both subsets of tire
19 resistance, but they are slightly different.

20 Q (BY MR. CHOWDHURY) And traction is not the
21 same thing as a force that opposes the rolling motion of
22 the tire?

23 A Correct.

24 Q Not all techniques of measuring rolling
25 existen- -- sorry. Strike that.

1 Not all techniques of measuring rolling
2 resistance involve measuring the friction between the
3 vehicle's drive wheels and the road surface, correct?

4 A Correct.

5 Q And Koebler650 does not describe determining
6 tire resistance as involving the measurement of friction
7 between the vehicle's drive wheels and the road surface,
8 correct?

9 MR. HERMAN: Objection; form.

10 A Not explicitly.

11 Q (BY MR. CHOWDHURY) Could you please turn to
12 the paragraph of Koebler650 that starts at Column 1 --
13 Column 4, Line 1, and just let me know when you're there.

14 A I am there.

15 Q On -- around Line 6 Koebler650 describes the
16 rpm of the vehicle's motor.

17 Do you see that?

18 A Yes.

19 Q What is your understanding of rpm of the
20 vehicle's motor?

21 A Revolutions per minute of the vehicle's motor.
22 It's how fast the angular velocity of the motor, how fast
23 the motor is turning.

24 Q So just to confirm, your understanding of rpm
25 of the vehicle's motor is how fast the motor is turning;

1 is that correct?

2 A Correct.

3 Q Rpm of the vehicle's motor is not the same
4 thing as traction, correct?

5 A Not by itself.

6 Q And traction is not the same thing as how fast
7 the motor is turning?

8 A Not by itself.

9 Q And would you -- sorry. Go ahead.

10 A I was just going to say, but in that sentence
11 it says the rpm of the vehicle's motor and then the
12 rotations per minute of the wheel, and that combination
13 is essentially a measure of traction.

14 Q Thank you, and I appreciate that explanation.

15 My question was focused exclusively on the
16 rpm of the vehicle's motor. So if I could re-ask the
17 question.

18 Traction is not the same thing as how fast
19 the motor is turning, correct?

20 A Correct.

21 Q You would agree with me that one way to
22 understand the rpm of the vehicle's motor is how -- is a
23 measurement of how fast the motor's shaft is spinning,
24 correct?

25 A Correct.

1 Q And a measurement of how fast the motor's shaft
2 is spinning does not depend on whether the friction --
3 does not depend on the friction between the vehicle's
4 drive wheels and the road surface, correct?

5 A That's not correct. So the engine speed can --
6 can change drastically if the traction changes because
7 there is no more resistance opposing the drive of the --
8 of the -- of the vehicle, of the, you know, the wheel.

9 I don't know if there -- something cut
10 out, so I don't know if that all came through.

11 Q Is it possible to measure how fast the motor
12 shaft is spinning without determining friction between
13 the vehicle's drive wheels and the road surface?

14 A Yes.

15 Q Is it possible to measure how fast the motor's
16 shaft is spinning without knowing whether the vehicle --
17 vehicle's wheels are slipping or gripping the road?

18 A Yes.

19 Q So continuing back to Line 6 of Column 4 of
20 Koebler650, there is a description of the wheel rotations
21 per minute.

22 Do you see that?

23 A I do.

24 Q So what is your understanding of wheel
25 rotations per minute in the context of the '616 patent?

1 A It is the angular velocity of the wheel, the
2 wheel/tire. Also, in -- he says rotations per minute, so
3 that's rpm, revolutions/rotations per minute.

4 Q So just to confirm, your -- your understanding
5 of the wheel rotations per minute in the context of the
6 '616 patent is revolutions per minute representing the
7 angular velocity of the wheels/tire; is that correct?

8 A Yes. Typically, they would be of each tire.

9 Q And the wheel rotations per minute is not the
10 same thing as traction, correct?

11 A By itself, no.

12 Q And traction is also not the same thing as
13 revolutions per minute representing the angular velocity
14 of each tire, right?

15 A Correct.

16 Q You would agree with me that one way to
17 understand wheel rotations per minute is a measure of how
18 fast a wheel is spinning, correct?

19 A Correct.

20 Q And how fast a wheel is spinning does not
21 directly indicate a frictional force between a tire and
22 the road, true?

23 A True.

24 Q If you could turn back to Koebler650, Column 4,
25 Line 10, continuing --

1 A Okay.

2 Q -- onto Line 11, Koebler650 describes tire
3 pressure.

4 Do you see that?

5 A I do.

6 Q What is your understanding of tire pressure in
7 the context of the '616 patent?

8 A This would be the inflation tire pressure,
9 which would give an indication of tire stiffness, but
10 basically it's the tire inflation pressure.

11 Q So just to confirm, your understanding of tire
12 pressure in the context of the '616 patent is tire
13 inflation pressure, which gives an indication of tire
14 stiffness; is that correct?

15 A Yes.

16 Q Tire pressure is not the same thing as
17 traction, correct?

18 A Correct.

19 Q And traction is not the same thing as the tire
20 inflation pressure, which gives the indication of tire
21 stiffness, right?

22 A Right.

23 Q You would agree with me that one way to
24 understand tire pressure is a measurement of internal air
25 pressure inside the tire, correct?

1 A Correct.

2 Q And the internal air pressure inside the tire
3 may be measured by a tire pressure sensor, correct?

4 A Correct.

5 Q And the measurement of internal air pressure
6 inside the tire by a tire pressure sensor can be
7 performed independently of measuring friction between the
8 vehicle's drive wheels and the road surface, correct?

9 A Correct.

10 Q And the internal air pressure inside the tire
11 does not depend on whether the wheels are slipping or
12 gripping on the road, correct?

13 A For the most part.

14 Q If you could now turn to Line 11 of Column 4 of
15 Koebler650, there is a description of drag force due to
16 rolling resistance of the vehicle.

17 Do you see that?

18 A Yes.

19 Q What is your understanding of drag force due to
20 rolling resistance in the context of the '616 patent?

21 A So in that specific line I believe it is the
22 same as the rolling resistance that I mentioned earlier,
23 which is the, you know, energy loss or the forces
24 opposing the rolling motion of the -- of the tire.

25 There are other places within 650 where

1 they mention air drag as a separate resistance force
2 acting on the vehicle, on the body of the car.

3 Sometimes automotive engineers will
4 include a aerodynamic drag term with the rolling
5 resistance for just the tire by itself.

6 Q Just to confirm, is your understanding of drag
7 force due to rolling resistance in the context of the
8 '616 patent forces that oppose the rolling motion of the
9 tire; is that correct?

10 A Correct.

11 Q Direct force due to rolling resistance is not
12 the same thing as traction, correct?

13 A Correct.

14 Q And traction is also not the same thing as
15 forces that oppose the rolling motion of the tire, right?

16 A Correct.

17 Q You would agree with me that one way to
18 understand drag force due to rolling resistance of the
19 vehicle is a measure of a resistive force that opposes
20 the motion of a rolling tire due to energy losses
21 primarily caused by tire deformation, correct?

22 A Correct.

23 Q And the resistive force that opposes the motion
24 of a rolling tire can be measured independently of
25 measuring friction between the vehicle's drive wheels and

1 the road surface, correct?

2 A Correct.

3 Q And the resistive force that opposes the motion
4 of a rolling tire does not depend on whether the wheels
5 are slipping or gripping on the road, correct?

6 A Again, they are related, so rolling resistance
7 will change with the amount of traction.

8 Q There is no description in the paragraph of
9 Koebler650 starting at Column 4, Line 1 of measuring
10 friction between the vehicle's drive wheels and the road
11 surface, true?

12 MR. HERMAN: Objection; form.

13 A Again, true. Not -- true.

14 Q (BY MR. CHOWDHURY) And there's also no
15 description of measuring the amount of power that is
16 transferred from the engine to the road, correct?

17 MR. HERMAN: Objection; form.

18 A Not explicitly in that paragraph.

19 Q (BY MR. CHOWDHURY) If you could now turn to
20 the paragraph of Koebler650 starting at Column 8,
21 Line 41, and just let me know when you are there.

22 A Column 8, Line 41?

23 Q Correct. Yeah.

24 A Okay.

25 Q There is no description in the paragraph of

1 Koebler650 starting at Column 8, Line 41 of measuring
2 friction between the vehicle's drive wheels and the road
3 surface, correct?

4 MR. HERMAN: Objection; form.

5 A Again, not explicitly.

6 Q (BY MR. CHOWDHURY) Friction of (inaudible).

7 THE COURT REPORTER: I'm sorry. I didn't
8 get that at all. Sorry.

9 MR. HERMAN: I did not.

10 Q (BY MR. CHOWDHURY) Yeah. Give me a moment.
11 Hopefully this is better.

12 There's no description in the paragraph of
13 Koebler650 starting at Column 8, Line 41 of measuring the
14 amount of power that is transferred from the engine to
15 the road, correct?

16 MR. HERMAN: Objection; form.

17 A Well, the paragraph starts off with "Examples
18 of environmental information inputs include, not limited
19 to," and so it's talking about these things that can be
20 used in order to assess the current environment that the
21 vehicle is driving on. And it lists this list of
22 sensors.

23 And so a POSITA would take that as, you
24 know, these are the sensors that I could use to determine
25 information about the environment, such as things that

1 we've discussed earlier.

2 Q (BY MR. CHOWDHURY) And I appreciate that
3 explanation.

4 The list of examples that are identified
5 in this paragraph does not include a measurement of the
6 amount of power that is transferred from the engine to
7 the road, correct?

8 MR. HERMAN: Objection; form.

9 A Correct.

10 Q (BY MR. CHOWDHURY) If you could now turn to
11 the paragraph of Koebler650 starting at Column 21,
12 Line 29.

13 A Okay.

14 Q There is no description in the paragraph of
15 Koebler650 starting at Column 21, Line 29 of measuring
16 friction between the vehicle's drive wheels and the road
17 surface, true?

18 MR. HERMAN: Objection; form.

19 A So can you repeat the question? I'm reading --
20 I'm reading the paragraph. Give me -- give me just a
21 second to read the paragraph.

22 Q (BY MR. CHOWDHURY) Sure. Take your time.

23 A Okay. If you can repeat the question.

24 Q Sure.

25 There is no description in the paragraph

Page 59

1 of Koebler650 starting at Column 21, Line 29 of measuring
2 friction between the vehicle's drive wheels and the road
3 surface, true?

4 MR. HERMAN: Objection; form.

5 A True.

6 Q (BY MR. CHOWDHURY) And there's no description
7 in this paragraph of measuring the amount of power that
8 is transferred from the engine to the road, correct?

9 MR. HERMAN: Objection; form.

10 A Well, the -- the paragraph talks about
11 measuring airflow and gas flow, which would be a measure
12 of -- you know, would basically give an indication of the
13 amount of power.

14 Q (BY MR. CHOWDHURY) And measurements relating
15 to airflow and gas flow are not determined by an rpm
16 sensor, correct?

17 A Correct.

18 MR. CHOWDHURY: I have no further
19 questions.

20 MR. HERMAN: I just have one question,
21 Dr. Bevly.

22 CROSS-EXAMINATION

23 BY MR. HERMAN:

24 Q Counsel just asked you questions about what is
25 described in Column 21 starting at Line 29 and proceeding

1 down to Line 62.

2 Was it your understanding that those
3 questions were asking whether there was an explicit
4 description of what counsel was asking about in the
5 paragraph?

6 A Correct.

7 MR. HERMAN: No further questions.

8 MR. CHOWDHURY: No additional questions
9 for me.

10 THE COURT REPORTER: Really quick.
11 Mr. Herman, did you want to order a copy of the
12 transcript?

13 MR. HERMAN: No. No, thank you.

14 THE COURT REPORTER: And reading and
15 signing of the doctor, will he?

16 MR. HERMAN: We'll have to consult the
17 patent office's rules to see what they allow, but I would
18 not expect anything back.

19 THE COURT REPORTER: Oh, great. Okay.

20 (End of proceedings at 1:46 p.m. CST)

21

22

23

24

25

1 STATE OF TEXAS)

2 I, Kelly Hassell, RPR, CLR, CSR in and for the State
3 of Texas, do hereby certify that, pursuant to the
4 agreement hereinbefore set forth, there came before me on
5 the 26th day of February, A.D., 2025, at 12:02 p.m.,
6 located in the City of Auburn, State of Alabama, the
7 following named person, to wit: DAVID BEVLY, PhD, who
8 was by me duly cautioned and sworn to testify the truth,
9 the whole truth and nothing but the truth, of his
10 knowledge touching and concerning the matters in
11 controversy in this cause; and that he was thereupon
12 carefully examined upon his oath, and his examination was
13 reduced to writing under my supervision; that the
14 deposition is a true record of the testimony given by the
15 witness, same to be sworn to and subscribed by said
16 witness before any Notary Public, pursuant to the
17 agreement of the parties; and that the amount of time
18 used by each party at the deposition is as follows:

19 Mr. Chowdhury - 1 hour, 32 minutes;

20 I further certify that I am neither attorney or
21 counsel for, nor related to or employed by, any of the
22 parties to the action in which this deposition is taken,
23 and further that I am not a relative or employee of any
24 attorney or counsel employed by the parties hereto, or
25 financially interested in the action.

26 In witness whereof, I have hereunto set my hand and
27 affixed my seal this 2nd day of March, A.D., 2025.

28

29

30

31

32

33



KELLY HASSELL, CSR No. 5729
Cert. Expires 10/31/26

Page 62

1 David Bevly, Ph.D., c/o
2 ORRICK HERRINGTON & SUTCLIFFE, LLP
3 51 West 52nd Street
4 New York, NY 10019
5

6 Case: Tesla, Inc. v. iQar Inc.
Date of deposition: February 26, 2025
7 Deponent: David Bevly, Ph.D.
8

9 Please be advised that the transcript in the above
referenced matter is now complete and ready for signature.
10 The deponent may come to this office to sign the transcript,
a copy may be purchased for the witness to review and sign,
11 or the deponent and/or counsel may waive the option of
signing. Please advise us of the option selected.
12 Please forward the errata sheet and the original signed
signature page to counsel noticing the deposition, noting the
13 applicable time period allowed for such by the governing
14 Rules of Procedure. If you have any questions, please do
15 not hesitate to call our office at (202)-232-0646.
16
17

18 Sincerely,
19 Digital Evidence Group
20 Copyright 2025 Digital Evidence Group
21 Copying is forbidden, including electronically, absent
22 express written consent.
23
24
25

1 Digital Evidence Group, L.L.C.
2 1730 M Street, NW, Suite 812
3 Washington, D.C. 20036
4 (202) 232-0646
5

6 SIGNATURE PAGE

7 Case: Tesla, Inc. v. iQar Inc.

8 Witness Name: David Bevly, Ph.D.

9 Deposition Date: February 26, 2025
10

11 I do hereby acknowledge that I have read
12 and examined the foregoing pages
13 of the transcript of my deposition and that:

14 (Check appropriate box):

15 () The same is a true, correct and
16 complete transcription of the answers given by
17 me to the questions therein recorded.

() Except for the changes noted in the
attached Errata Sheet, the same is a true,
correct and complete transcription of the
answers given by me to the questions therein
recorded.

17

18 _____
DATE

WITNESS SIGNATURE

19

20

21

22 _____
DATE

NOTARY

23

24

25

1 Digital Evidence Group, LLC
2 1730 M Street, NW, Suite 812
3 Washington, D.C. 20036
4 (202)232-0646

5

6

ERRATA SHEET

7

8 Case: Tesla, Inc. v. iQar Inc.

9 Witness Name: David Bevly, Ph.D.

10 Deposition Date: February 26, 2025

11 Page No. Line No. Change

12

13

14

15

16

17

18

19

20

21

22 Signature

Date

23

24

25

A A.D 1:17 61:4,19 ability 8:8 above-styled 1:16 absent 7:25 62:21 accelerometers 38:8 accurate 8:5 acknowledge 63:10 act 47:9,14,22 48:4 acting 47:19,19 55:2 action 61:13,15 additional 60:8 advise 62:11 advised 62:9 aerodynamic 34:13 55:4 affect 33:17 affixed 61:19 afforded 9:21 afternoon 4:23 agree 6:19 8:2,3 13:22,25 14:1 15:17 17:19 18:1,7,8 25:25 28:10 29:1 32:17 33:25 41:15 42:2,25 43:5 44:8 50:21 52:16 53:23 55:17 agreement 1:21 61:3,10 ahead 50:9 air 10:11 53:24 54:2,5,10 55:1 airflow 59:11,15 Alabama 1:20 4:12 61:4 all-encompassing 27:2 31:18 allow 60:17 allowed 62:13	amount 22:9,17 22:23 23:1,3,3 23:8,9 24:3,13 24:18,21 25:4,8 25:9,20 27:8,13 27:17,25 28:7 30:4,7,20 31:10 32:2,5,11 33:12 33:14,16,19 34:6,12 35:17 39:18 40:5,17 46:20 56:7,15 57:14 58:6 59:7 59:13 61:10 amp 42:21 43:1 43:14 analysis 9:22 16:14 analyze 17:13,17 analyzed 25:15 analyzing 10:23 12:8 13:11,16 13:23 16:20 17:5,9,21 18:3 18:10 20:19 21:17 and/or 14:12 62:11 angle 35:1,2 angular 23:6,7,7 23:9 24:6 34:21 34:22,23 35:2 35:22 49:22 52:1,7,13 annotations 5:18 answer 7:8,14,15 8:1 answers 7:6 63:13,16 APPEAL 1:1 appearances 4:4 applicable 62:13 application 5:13 applications 38:24 appreciate 11:13 23:18 27:11	50:14 58:2 appropriate 63:12 area 36:7 Arguello 2:5 arrow 34:9 art 9:22 12:21 13:7 23:17 arts 36:1 asked 47:11 59:24 asking 7:4 60:3,4 assertion 7:25 assess 57:20 assessed 22:12 24:8 attached 48:5 63:15 attorney 7:12 61:11,14 attorney/client 7:25 Auburn 1:20 4:12 61:4 audibly 7:7 automotive 38:24 55:3 available 11:25 aware 29:21 B back 20:5,23 39:6 39:10,13 42:19 51:19 52:24 60:18 barometric 38:10 basically 5:15 11:5 12:20 38:5 44:18 47:17 53:10 59:12 battery 42:20,21 42:21,22,25 43:1,2,2,5,10 43:14 beginning 1:18 behalf 4:6,8 believe 5:16	10:16 11:16 13:18 16:6,21 17:8 20:16 22:19 23:14 29:8 44:11,18 54:21 best 6:24 8:5 better 47:12 57:11 Bevly 1:9,15 3:12 4:17,25 5:1 10:22 39:1,12 59:21 61:5 62:1 62:7 63:8 64:9 bio 7:19 bit 6:23 39:24,25 47:12 BOARD 1:1 board's 5:16 body 55:2 box 63:12 break 7:18,21 8:1 39:3,3,9 breaks 7:20 broader 32:13 broke 39:23 brought 5:8 C C 2:1 4:1 c/o 62:1 calculating 46:19 California 2:7 call 36:19 62:15 called 34:21 capabilities 38:21 car 19:18 55:2 carefully 61:7 case 1:3 7:9 62:6 63:7 64:8 cause 1:17 61:7 caused 55:21 cautioned 4:18 61:5 centers 28:5 Central 4:3 39:6 Cert 61:25	certain 41:10 Certified 4:11 certify 61:3,11 cetera 15:3 16:11 18:25 29:22 chance 7:19 8:13 change 23:2,3,7,9 23:24,24,25 24:3,15,18,19 25:17 26:4,5,6 27:10,14,18,21 29:22 34:23 35:1,13,16 38:6 38:10 51:6 56:7 64:11 changes 51:6 63:14 changing 29:21 chat 8:12 11:24 Check 63:12 Chowdhury 2:3 3:2 4:5,5,16,22 5:1 8:18 12:3 12:13 13:15 16:23 17:19 18:1,8,16 19:10 19:15 20:1,5,22 21:8,15,21 22:1 22:25 23:18 24:17 25:3,7,25 26:8 27:3,11 28:6 29:9,13 31:20 32:14 33:19,24 35:20 38:3 39:1,7,12 40:2,3,12,21 41:2 45:8,13,18 46:15 48:11,20 49:11 56:14,19 57:6,10 58:2,10 58:22 59:6,14 59:18 60:8 61:11 City 2:7 61:4 Civil 1:21 claimed 10:8 claims 9:20 10:2
---	---	--	---	--

clarify 7:2 48:2	32:8,12	27:8,13,25	CST 1:18 60:20	54:11 56:4
clarity 6:23	conditions 10:24	28:12,24 29:24	current 13:2 37:5	depends 28:20
clean 5:20	11:6 12:22	30:2,3,17,18	37:6,9,13,17	31:23
CLR 1:19 61:2	22:22 24:12	31:7,22 32:5	41:11,11,16,16	deponent 62:7,10
co- 46:21	29:14,15,21	33:12 34:6,11	42:3,7 57:20	62:11
coefficient 46:22	30:2 31:13,16	34:17 35:17	cut 51:9	deposed 5:21,24
collected 13:12	31:21,24 32:12	36:18 37:11,15		6:1
13:16	32:15 46:13,21	37:16,20,24	D	deposition 1:8,14
column 11:17,18	conducted 6:4	40:13,15,24	D 3:1 4:1	5:3,9 6:3 7:21
12:4,14,15 14:9	conducting 9:22	41:1 42:5,17,18	D.C 1:24 63:3	9:7 10:20 61:8
14:9,10 16:8	confirm 10:1	43:3,4,8,12,13	64:3	61:10,13 62:6
18:18,21 20:6,8	19:19 44:23	43:16,17,21	Dallas 4:11	62:12 63:9,11
20:9,24 21:1,7	49:24 52:4	45:4,10,15,17	data 10:23 11:1,1	64:10
26:9,11,14	53:11 55:6	46:1,7 47:15,24	12:8 13:12,16	depositions 6:22
29:17 30:16,17	consent 62:22	48:16,23 49:3,4	13:24 15:1	describe 10:23
30:23 31:7,11	constant 34:10	49:8 50:1,2,4	16:23 17:2,14	19:22 20:1
36:23,25 37:23	34:13	50:19,20,24,25	17:17,21 18:3	22:17,19,21
41:3,23 44:12	constitute 23:8	51:4,5 52:7,10	18:11 20:19	24:19 26:1 35:5
49:12,13 51:19	construction 9:20	52:15,18,19	21:17	35:8,20 36:3,12
52:24 54:14	consult 60:16	53:14,17,18,25	database 11:9,10	36:14,17 46:4
56:9,20,22 57:1	context 32:19	54:1,3,4,8,9,12	14:14	49:5
57:13 58:11,15	44:3,24 47:7	55:9,10,12,13	databases 15:13	described 14:8
59:1,25	51:25 52:5 53:7	55:16,21,22	Date 62:6 63:9,18	15:5 16:24
combination	53:12 54:20	56:1,2,5,16,23	63:22 64:10,22	23:12 59:25
50:12	55:7	57:3,15 58:7,9	David 1:9,15	describes 14:15
combine 11:11	continues 12:16	59:8,16,17 60:6	3:12 4:17,25	15:11 19:3 24:7
come 33:7 62:10	continuing 51:19	63:13,15	61:5 62:1,7	26:23 29:13
comes 32:24	52:25	corrections 9:9	63:8 64:9	30:1 43:18,22
coming 11:9	controversy 61:7	correctly 9:24	day 1:17 61:4,19	47:2 49:15 53:2
communicate	convention 28:20	10:13 40:9	December 9:3	describing 17:9
15:23 16:3,10	29:3	correlated 24:22	decision 5:16	description 3:7
communicated	copies 5:20	25:19 27:16	declaration 3:11	11:15 12:7
16:14 30:15	copy 8:16,20	28:7	5:10,11 8:11,24	13:11,15,23
31:5	60:11 62:10	counsel 4:3 59:24	9:6,10,16,18,23	16:13 17:4
communication	Copying 62:21	60:4 61:12,14	10:4,7 22:2,8	20:11,18 21:4
17:20 18:2,9	Copyright 62:20	62:11,12	31:25 39:13,16	21:10,16 23:20
complete 62:9	correct 5:19 6:11	course 48:5	40:4 46:14,17	30:19 31:9
63:13,15	7:16 9:4 10:2,3	court 4:2,10,14	define 40:12,14	37:23 40:16,22
completely 6:18	10:17,18 12:8	7:7 39:8,10,23	defined 48:7	41:21 44:7,9,13
concerned 32:21	13:24 14:9,17	57:7 60:10,14	definition 47:12	46:16 51:20
concerning 61:6	15:5 17:1,6,23	60:19	48:10	54:15 56:8,15
condition 22:11	18:4,12 19:4,11	courtesy 6:16,17	definitions 10:2	56:25 57:12
22:23 25:3,7,9	20:12,19 21:5	created 32:24	deformation	58:14,25 59:6
25:13,19 26:2	21:11,23 22:5	33:7,20,21	55:21	60:4
26:20 27:5,24	22:14,15,17	CROSS-EXA...	degree 27:20	detail 17:16
28:3,7 29:9,10	23:12 24:14,18	59:22	degrees 27:21,21	46:14,17
31:19,23 32:1,4	25:8 26:12,24	CSR 1:19 61:2,24	depend 51:2,3	details 33:4

determine 10:24 11:10,12 12:22 13:1,8,19,21 16:18,21 17:9 17:22 18:4,11 20:19,21 21:17 28:3 29:5 31:13 31:21,24 32:3 57:24 determined 30:10 31:1 32:11 34:5 42:16 46:20 59:15 determining 10:10 11:5 12:11 19:22 20:2 22:9,17,19 29:6,15 30:11 30:20 31:1,10 31:13,21 32:16 34:5 37:10,14 37:18 46:4 47:2 49:5 51:12 detracts 33:1 device 14:16 29:20 dictated 46:21 difference 23:4 46:11 different 16:25 21:25 23:19 27:19 31:17 41:6 48:19 Digital 1:23 62:19,20 63:1 64:1 diminished 20:14 Direct 3:2 4:21 55:11 direction 10:10 11:19,20 12:18 14:25 16:20 18:24 directly 20:4 21:19 52:21 disclose 22:9	discuss 10:25 22:10 31:25 46:13 discussed 22:20 58:1 discusses 10:25 16:22 44:4 46:24 discussing 12:11 discussions 46:19 distance 14:24 16:19 distinct 44:6 doctor 60:15 document 8:12 8:14 10:19 11:24 documents 5:8 5:18 Dr 5:1,14 10:22 39:1,12 59:21 drag 34:9,13 54:15,19 55:1,4 55:6,18 drastically 51:6 drive 39:20 40:8 40:23 42:4,9,13 42:17 43:7,12 43:16,20 46:1,6 47:4 49:3,7 51:4,7,13 54:8 55:25 56:10 57:2 58:16 59:2 driving 57:21 drops 28:22 due 54:15,19 55:7,11,18,20 duly 4:13,18 61:5 dynamic 34:9	54:22 58:1 easier 39:4 easiest 8:18 efficiency 33:2 46:19 eight 6:1 electronically 8:13 62:21 employed 61:12 61:14 employee 61:13 energy 32:20,21 32:23,23 33:6 33:20 54:23 55:20 engine 39:18 40:6 40:6,18 46:11 46:18,25 51:5 56:16 57:14 58:6 59:8 engineers 55:3 environment 57:20,25 environmental 57:18 errata 62:12 63:15 64:6 especially 6:21 38:25 ESQ 2:3,12 essentially 50:13 et 15:3 16:11 18:25 29:22 evaluate 28:5 Evidence 1:23 62:19,20 63:1 64:1 exact 5:22,23 exactly 16:7 25:24 examination 3:2 4:21 61:7 examined 61:7 63:11 example 15:22 16:2,9,18 19:3 20:12,15 21:5	21:11,16 25:14 26:1 28:14,18 28:22 29:2,19 29:21 30:14 31:4 32:9 34:8 34:15 examples 26:19 26:23 27:1,3 29:14 30:2 31:17,18 37:4 38:20 41:6,10 41:18 43:2,18 57:17 58:4 exclusively 50:15 Exhibit 3:7,8,11 8:10,15 10:17 11:23 12:1 26:9 41:2 EXHIBITS 3:6 existen- 48:25 expect 60:18 experience 6:2 experienced 29:6 30:11 31:1,14 31:22 32:16 34:6 37:10,14 37:18 expert 5:14 8:11 28:2 Expires 61:25 explain 17:17 explained 30:16 31:6 explanation 11:13 23:16,21 23:23 27:12 50:14 58:3 explicit 60:3 explicitly 15:9 17:8 20:15 21:14 22:21 35:10 36:5,15 36:19 40:14,20 46:9 47:5 49:10 56:18 57:5 express 13:23 62:22	expressly 7:14 22:8 extend 6:17 external 11:1 14:13,14 30:15 31:5
F				
				fact 28:4 fair 7:3 24:9,22 25:20 28:6 29:10 32:14 41:7,8 48:11 falling 19:9 fast 49:22,22,25 50:6,18,23 51:1 51:11,15 52:18 52:20 February 1:9,17 61:4 62:6 63:9 64:10 Federal 1:21 field 6:5 23:15 financially 61:15 find 46:23 fine 6:6 10:21 39:5 finished 6:23 first 4:18 22:7 Fish 2:4 4:6 fix 26:13 flat 24:20 flow 59:11,15 focused 50:15 following 61:5 follows 4:20 61:10 forbidden 62:21 force 33:1,10 34:1,12 48:6,7 48:21 52:21 54:15,19 55:1,7 55:11,18,19,23 56:3 forces 32:25 33:7 33:21 34:9 45:1 45:19,22 47:8,9

47:14,17,22 48:3,12 54:23 55:8,15 foregoing 63:11 form 12:2,9 13:13,21 16:16 17:7,24 18:13 19:7,12,24 20:3 20:20 21:6,12 21:18,24 22:18 23:13 24:16,25 25:5,23 26:3,25 27:9 28:1 29:7 29:11 31:15 32:6 33:13,22 35:18 36:21 37:25 40:19,25 45:5,11,16 46:8 47:25 48:17 49:9 56:12,17 57:4,16 58:8,18 59:4,9 forth 1:22 61:3 forward 62:12 frame 23:15 38:25 friction 39:19 40:7,23 42:4,8 42:12,16 43:6 43:11,15,20,23 45:25 46:5,22 47:3 49:2,6 51:2,3,12 54:7 55:25 56:10 57:2,6 58:16 59:2 frictional 52:21 front 8:16 full 4:24 function 39:19 40:7,22 further 9:20 59:18 60:7 61:11,13	gas 59:11,15 gather 11:1 general 11:9 38:18 generally 5:22,24 6:1 generic 44:19 getting 14:25 15:1 give 6:16 7:15,19 53:9 57:10 58:20,20 59:12 given 6:2 7:15 61:8 63:13,16 gives 19:13 35:2 53:13,20 go 9:15 10:4 26:9 41:3 44:12 50:9 goes 27:20 going 26:6 39:2 50:10 good 4:23 33:9 governing 62:13 grade 23:24 26:5 35:13,16 gradient 26:20 27:4,7,10,12,14 27:16,18,19,20 27:22 28:11,15 28:19,24 29:2 great 6:15 12:3 39:7 60:19 gripping 51:17 54:12 56:5 Group 1:23 62:19,20 63:1 64:1 guess 19:8 32:7 gyroscope 34:19 34:20 35:6,9,11 35:15 37:4 38:1 38:4,14,15,18 38:24 gyroscopes 34:22 34:25 35:21 36:20 38:7,20 38:22,23	H hand 61:18 happens 19:18 Hassell 1:19 4:10 61:2,24 head 7:8 hear 6:13 heave 26:7 height 38:11 hereinafter 1:22 hereinbefore 61:3 hereto 61:14 hereunto 61:18 Herman 2:12 4:7 4:7 7:12 12:9 13:13 16:16 17:7,24 18:5,13 19:7,12,24 20:3 20:20 21:6,12 21:18,24 22:18 23:13 24:16,25 25:5,23 26:3,25 27:9 28:1 29:7 29:11 31:15 32:6 33:13,22 35:18 37:25 39:25 40:19,25 45:5,11,16 46:8 47:25 48:17 49:9 56:12,17 57:4,9,16 58:8 58:18 59:4,9,20 59:23 60:7,11 60:13,16 Herrington 2:12 4:8 62:2 hesitate 62:15 Hi 5:1 highway 28:5 Hopefully 57:11 hour 7:18 39:2 61:11 hours 42:21 43:1 43:14	identified 58:4 identifies 41:10 42:20 identify 47:1 impair 8:7 important 6:15 IMU 38:2,13,15 38:16,16,18,21 inaudible 39:20 39:21 41:25 57:6 incline 28:11 29:5 include 24:11 25:9 26:19 27:4 31:16 32:8,10 34:13 38:10 44:19,20 45:6 55:4 57:18 58:5 included 38:9 includes 45:8,13 including 46:13 62:21 incorrect 48:10 independently 54:7 55:24 indicate 52:21 indication 19:13 53:9,13,20 59:12 inertial 36:17,19 36:21,21 37:24 38:4,5,7,9,12 38:19 inferred 13:19 inflation 53:8,10 53:13,20 information 11:2 11:8,11,22 12:11,22 13:1,8 13:9 14:2,11,16 14:18,20 15:2 15:12,13,18,19 16:14,25 17:5 17:10,11,14,15 17:20,22 18:2,4 18:9,11 19:4,17	19:20,23 20:2 20:16 21:17 22:10,10 24:8 24:11 30:10,14 30:25 31:4 34:19 35:6,9,25 36:4,13 37:5 38:2 41:7,18 43:3,19 45:7,21 46:10 57:18,25 inputs 14:16,18 14:20 15:19 57:18 inside 53:25 54:2 54:6,10 instance 1:15 7:10 instructs 7:14 integrating 34:25 35:23 intensity 16:18 Inter 5:2 interaction 33:1 interested 61:15 internal 53:24 54:2,5,10 involve 45:25 49:2 involving 46:5 47:3 49:6 IPR 5:2,3,6,16 8:11 IPR2024-00630 1:3 iQAR 1:4 62:6 63:7 64:8 isolate 34:14 isolated 34:9 issue 5:23
G G 4:1		I		J job 47:12
				K K 2:12 Kelly 1:18 4:10 61:2,24

know 5:8 7:22 8:13 9:16 10:5 11:25 12:25 13:9 14:13 16:20 17:12 18:18 20:7,16 20:24 22:3 23:25 26:10 32:4 35:12 36:24 39:14 41:4 44:19 46:23 49:13 51:8,9,10 54:23 56:21 57:24 59:12 knowing 11:21 51:16 knowledge 12:12 12:19 61:6 known 22:12 23:16 Koebler 10:20 15:22 26:4 30:20 36:14 37:4 Koebler650 5:14 10:8,15,20,23 11:4,14,18,24 12:4 13:17 14:1 14:15 15:11,18 15:22 16:2 18:17,24 19:3 19:22 20:1,6,23 21:5 22:8,16 23:12,21 24:7 26:1,8,15,19,23 29:13,19 30:1 31:7 35:5,8,20 36:3,12,17,24 37:21 40:12,16 40:22 41:3,9,23 42:19,20 43:18 44:7,8 46:4,16 47:2 49:5,12,15 51:20 52:24 53:2 54:15 56:9 56:20 57:1,13	58:11,15 59:1 L L.L.C 63:1 lack 6:23 left 9:12 26:15 let's 8:10 9:15 10:4 11:17,23 18:16 22:1 26:8 41:2 letter 9:12 level 6:4 34:11 light 16:19 lights 11:6 limited 57:18 line 11:18 12:5,15 12:16,24 14:9,9 15:10,10 16:8 18:18,21,23 20:7,9,24 21:7 21:14 22:7 26:10,12,14,15 29:17 30:17,23 31:7 36:23,25 37:3,23 41:4,9 42:20 44:13,14 49:13,15 51:19 52:25 53:2 54:14,21 56:9 56:21,22 57:1 57:13 58:12,15 59:1,25 60:1 64:11 lines 11:17 16:6 list 31:17 57:21 58:4 listed 15:8 lists 14:10 27:1 57:21 little 6:22 23:19 38:18 39:24 44:19 47:12 LLC 64:1 LLP 2:12 62:2 located 1:20 4:11 4:12 11:11 12:19 61:4	location 10:11 looked 21:13 46:25 looking 33:3 34:23 35:1 37:22 loss 32:20,22 54:23 losses 32:24 33:6 33:20 44:20,21 44:25 45:1,2,19 55:20 lot 38:8 M M 1:24 2:1 3:12 63:2 64:2 magnetometers 38:8 magnitude 23:4 maintain 34:10 34:12,17 management 14:16 15:11,23 16:3,10 17:12 29:20 map 11:9,10 15:2 15:24 16:4,11 March 61:19 Mark 4:25 marked 8:15 12:1 markings 5:19 matter 62:9 matters 61:6 mean 5:22 29:8 41:20 meaning 9:21 means 45:9,14 measure 25:2,17 25:17 27:14,15 27:22 32:22 34:16,19,22,24 35:1,2,6,9,11 35:14,19,24 36:2,4,9,10,13 36:16 38:10 40:10,17 42:3	46:12,13 47:3 50:13 51:11,15 52:17 55:19 59:11 measured 32:15 33:16 34:16 35:15,15 37:9 37:13,18 42:8 42:12 43:6,10 43:15,19,22 54:3 55:24 measurement 19:10,11 28:4 36:18,20,22 37:24 38:4,5,7 38:9,13,19 39:17 40:5,11 46:5 49:6 50:23 51:1 53:24 54:5 58:5 measurements 22:13 24:9 59:14 measures 34:20 38:5 measuring 32:2 34:10,23 35:12 35:13 36:8 38:1 42:3,8,12,16 43:6,11,15,19 45:24,25 48:24 49:1,2 54:7 55:25 56:9,15 57:1,13 58:15 59:1,7,11 medication 8:7,9 mention 28:2 36:5,20 46:18 55:1 mentioned 13:18 21:13,14 35:23 54:22 mentions 12:23 14:12,22,23,24 15:1 16:17 20:13,14 32:9 38:1 44:16	meters 28:14,15 28:23,23 method 14:6 methods 46:2 middle 37:3 minute 49:21 50:12 51:21,25 52:2,3,5,6,9,13 52:17 minutes 39:5 61:11 missed 39:25 moisture 19:6,8,9 19:11,13,16,17 19:20,23 20:2 21:17,20,22 moment 57:10 Morellas' 5:14 motion 33:1,10 34:2,17 38:6 45:2,20 47:9,18 48:4,4,8,13,21 54:24 55:8,15 55:20,23 56:3 motor 41:11,12 41:16,17 42:11 42:15 49:16,20 49:21,22,23,25 49:25 50:3,7,11 50:16,19,22 51:11 motor's 50:23 51:1,15 moves 29:20 moving 25:16 N N 2:1 3:1 4:1 name 4:24 5:1 63:8 64:9 named 61:5 near 16:8 18:23 necessitating 29:23 need 7:9,20,21 8:16,21 10:2 12:25 13:8 48:1
--	---	---	--	--

negative 29:2 neither 61:11 New 2:13,13 62:4 nice 39:2 nod 7:8 Notary 61:9 63:22 noted 63:14 notes 5:19 noticing 62:12 noting 62:12 number 3:9 5:4,5 10:16 numbered 1:17 NW 1:24 63:2 64:2 NY 62:4 O O 2:1 4:1 oath 4:20 6:7,10 7:16 61:7 objection 12:9 13:13 16:16 17:7,24 18:5,13 19:7,12,24 20:3 20:20 21:6,12 21:18,24 22:18 23:13 24:16,25 25:5,23 26:3,25 27:9 28:1 29:7 29:11 31:15 32:6 33:13,22 35:18 37:25 40:19,25 45:5 45:11,16 46:8 47:25 48:17 49:9 56:12,17 57:4,16 58:8,18 59:4,9 objections 7:12 obligated 7:15 obtained 14:11 off-board 15:13 office 1:1 62:10 62:15 office's 60:17	oftentimes 25:15 Oh 6:1 41:22 60:19 okay 6:5,25 12:6 18:22,23 20:10 21:3 22:1 26:14 37:2 44:12,15 53:1 56:24 58:13,23 60:19 open 8:13,14,17 operational 41:7 41:18,19 43:3 43:18 opinion 9:19 10:1 22:16 24:2,7 27:17 38:12 44:23 47:13 oppose 45:2,19 47:9 48:13 55:8 55:15 opposes 33:10 34:1 48:21 55:19,23 56:3 opposing 48:4,8 51:7 54:24 optical 14:23 16:18 optimizing 32:21 option 62:11,11 ORAL 1:8,14 order 11:11 12:21,25 13:8 13:19 26:13 57:20 60:11 ordinary 9:21 12:21 13:7 23:17 orientation 37:5 37:9,13 41:12 41:17 42:7 original 62:12 Orrick 2:12 4:8 62:2 Owner 1:4 2:11 4:9 P 	P 2:1,1 4:1 P.C 2:4 p.m 1:18,18 4:3 39:9,9,11 60:20 61:4 page 3:2,7 8:23 9:1 62:12 63:6 64:11 pages 26:13 63:11 Paper 5:15 paragraph 9:15 9:18 10:4,7 11:14 12:4,7,14 12:14,16 13:4 13:12,17,23 14:8,15,21,22 15:5,8,9,20 16:15,17,24 17:4 18:17,17 20:6,11,18,23 21:4,10 22:2,4 22:7 27:4 30:17 30:19,22,23 31:6,6,10,11 37:21,22 39:13 40:3 41:6 47:1 49:12 56:8,18 56:20,25 57:12 57:17 58:5,11 58:14,20,21,25 59:7,10 60:5 part 15:19 16:24 22:22 36:21 38:2 54:13 Partes 5:2 particular 10:9 parties 61:10,13 61:14 party 61:10 patent 1:1,1,3,4 2:11 3:8 4:8 5:4 5:6,6,12,12,13 10:16 23:12 32:19,21 44:3,9 44:25 47:7 51:25 52:6 53:7	53:12 54:20 55:8 60:17 patent's 9:19 Patrick 2:12 4:7 pending 7:25 percent 28:15,24 performed 54:7 period 62:13 person 12:20 13:7 23:17 61:5 pertinent 5:4 Petitioner 1:3,16 2:2 4:6 5:2 Ph.D 62:1,7 63:8 64:9 PhD 1:9,15 3:12 4:17 61:5 pherman@orri... 2:14 pitch 26:6 places 44:15 54:25 plain 9:21 playing 6:4 please 4:4,23 5:7 13:14 19:25 21:9 49:11 62:9 62:11,12,14 point 7:20 28:13 46:15 portion 46:16 pose 7:12 POSITA 12:20 17:13,16 22:12 23:14,25 36:15 39:16 40:4 45:6 46:10 57:23 position 10:9,23 11:4,10,12,21 12:8,12,25 13:1 13:3,5,6,9,12 13:16,21,24 15:7 23:2,4,5,5 23:7,9,25 24:4 24:18,19 25:17 36:9,10,12,16 positive 28:19	possible 29:4,8 31:12,20 42:2,6 51:11,15 potentially 36:7 power 14:16 15:11,23 16:2,9 17:11 29:20 34:10 39:18 40:5,17 56:15 57:14 58:6 59:7 59:13 predict 32:22 predicted 11:20 preparing 9:6 present 11:19 12:17,18 19:21 pressure 10:11 35:24 36:2,4,6 38:10 53:3,6,8 53:10,12,13,16 53:20,24,25 54:2,3,5,6,10 pretty 38:24 previously 5:21 18:15 primarily 55:21 printed 8:16,20 printout 5:11 prior 9:22 36:1 probably 47:11 47:11 Procedure 1:21 62:14 proceed 4:15 proceeding 5:3,5 10:17 59:25 proceedings 60:20 produced 1:15 provide 8:4 15:2 provided 7:16 8:17 17:15 23:22 provides 23:21 41:6 46:16 Public 61:9 purchased 62:10
---	---	---	---	--

purposes 9:21	16:25 17:3,5,11	52:13	road 19:18 22:11	25:15 31:25
pursuant 61:3,9	receives 14:16	require 9:20	22:22,22,24	32:3,10 33:15
Q	15:12	11:21 12:12,19	24:12 25:3,7,9	33:17
question 7:2,8,25	receiving 14:6	32:1	25:16,19 26:20	route 11:20 29:22
8:1 10:22 13:14	record 4:3,4,24	required 34:10	27:4,5,7,12,16	Row 21:1,1
17:25 19:25	39:8,11 61:8	34:17	27:24 28:4,7,11	rpm 41:12,17
21:9 23:19 25:6	recorded 63:14	requires 6:10	28:12,14,22	42:11,15 46:11
32:8 35:7 37:12	63:16	resistance 32:19	29:5,9,10,14,15	46:18,18,25
44:1 50:15,17	reduced 61:8	32:20,23 33:6	29:21 30:2	49:16,19,24
58:19,23 59:20	Redwood 2:7	33:11,15,18	31:13,16,19,21	50:3,11,16,22
questions 6:17	refer 5:5,13,15	34:1,4,8,15	31:23,24,25	52:3 59:15
7:6,13 59:19,24	10:19 44:6	43:24,25 44:3,5	32:1,3,4,8,10	RPR 1:19 61:2
60:3,7,8 62:14	reference 11:16	44:13,16,17,18	32:12,12,15,25	rules 1:21 60:17
63:14,16	13:3,5	44:21,24 45:3,8	33:16,17 37:6	62:14
quick 60:10	referenced 5:12	45:13,24,25	37:17 39:19	Ryan 2:3 4:5 5:1
quite 32:7	14:20 62:9	46:5 47:2,7,8	40:6,7,8,18,24	S
quote 9:19 25:15	references 37:4	47:14,17,22	42:5,9,13,17	S 2:1 4:1
R	referring 10:15	48:3,7,12,15,19	43:7,12,16,20	samples 17:22
R 2:1,1 4:1	15:18 16:13	49:2,6 51:7	46:1,6,13,21	18:4,11
rain 18:25 19:3,6	21:15 41:21	54:16,20,22	47:4 49:3,7	says 11:18 12:17
19:8,8,10,23	refers 15:18	55:1,5,7,11,18	51:4,13,17	14:12 15:23
20:2,4,12,14,15	refresh 6:3	56:6	52:22 54:8,12	16:2 17:10
20:15,19,21	related 21:20,22	resisting 47:17	56:1,5,10,16	26:19 40:10
21:5,11,13,14	33:14,15 56:6	resistive 55:19,23	57:2,15 58:7,16	50:11 52:2
21:15,22	61:12	56:3	59:2,8	seal 61:19
raining 19:18	relating 20:12	resists 33:1	roads 25:14 28:5	search 8:21
rare 38:25	21:5,11 59:14	responding 6:18	32:25 33:8	second 58:21
rate 35:22	relative 61:13	restate 44:1	rolling 32:18,20	see 9:11 11:15,17
rchowdhury@f...	relevant 5:3,6	47:21	32:23 33:6,11	12:13 13:3,11
2:8	rely 8:20	review 62:10	33:15,18,25	13:15 15:7,15
re-ask 50:16	remote 5:9 6:21	reviewed 9:6	34:4,8,15 43:25	15:25 16:5,7,12
re-segmenting	remotely 1:10	revolutions 49:21	44:16,20 47:6,8	16:13 17:13
29:23	repeat 13:14 16:1	52:6,13	47:10,14,15,16	19:1 21:16
read 9:24 10:13	17:25 19:25	revolutions/rot...	47:16,17,18,22	23:20 26:17,21
16:7 22:14	21:9 25:6 37:12	52:3	47:23 48:3,4,7	31:9 35:4 37:7
29:24 40:1,9	42:14 58:19,23	Richardson 2:4	48:8,12,13,15	41:13 42:1,23
45:7 58:21	repeated 16:7	4:6	48:21,24 49:1	49:17 51:22
63:10	report 5:14 8:11	right 13:18 15:8	54:16,20,22,24	53:4 54:17
reading 17:13	10:25 11:16	15:20 16:9	55:4,7,8,11,15	60:17
58:19,20 60:14	28:3	18:23 19:6 21:8	55:18,20,24	segments 11:20
ready 62:9	Reported 1:10	25:4 26:2 27:5	56:4,6	27:19,22
Really 60:10	reporter 4:2,10	28:16,19 30:5,8	rolls 34:2	selected 62:11
reason 8:4	4:11,14 7:7	30:12,21 31:2	rotational 23:6	sensing 38:21
reasonable 7:3	39:8,10,23 57:7	37:1 41:18	rotations 50:12	sensor 10:23 11:4
received 14:2	60:10,14,19	52:14 53:21,22	51:20,25 52:2,5	11:10,12 12:8
	represent 5:2	55:15	52:9,17	13:1,3,6,11,12
	representing 52:6	rises 28:14	roughness 22:24	

13:16,16,24 15:7 16:18,23 17:14,21 18:3 18:11 20:19 21:17 29:4 35:24 36:2,4,6 36:9,10,13,16 38:19 54:3,6 59:16 sensor' 10:9 sensors 10:8 14:12,23,24 15:4,8 16:21 17:9 31:12 34:5 34:16 46:18 57:22,24 sentence 16:9,22 18:6 44:14 50:10 sentences 17:18 separate 55:1 service 14:3 15:3 15:24,24,24 16:3,4,4,10,11 16:11,15 17:1,3 17:6,12,15,21 18:3,10 30:16 31:6 services 15:3 set 1:22 61:3,18 shaft 50:23 51:1 51:12,16 sheet 62:12 63:15 64:6 Shorthand 4:11 show 44:4 side 26:15 sign 28:20 29:3 62:10,10 signature 9:1,2 62:9,12 63:6,18 64:22 signed 9:3 62:12 signing 60:15 62:11 similar 15:2 17:2 similarly 10:19	30:25 42:8 Sincerely 62:18 sir 4:23 22:16 skill 12:21 13:7 23:17 sky 19:9 slightly 48:19 slip 44:21 46:12 slipping 51:17 54:11 56:5 slope 28:11 29:5 slope/grade 37:6 37:17 snow 18:25 sorry 16:1 17:25 20:4 21:7 25:6 25:14 27:6 31:11 35:4 39:23 41:24 42:1,14 44:1 48:25 50:9 57:7 57:8 Sounds 39:7 sources 15:13 speaking 6:23 specific 10:2 13:5 32:12 35:21 38:13 47:1 54:21 specifically 20:21 22:2 44:16 47:19 48:7 specification 44:10 46:10 specifications 35:12 speed 34:10,13 41:11,11,16,16 42:3 46:11,18 46:24,25 51:5 spinning 50:23 51:2,12,16 52:18,20 stand-alone 38:23 start 39:6 started 5:7	starting 12:5 14:8 18:17,21 20:6,23 30:17 30:23 31:7 37:22 41:9 42:19 56:9,20 57:1,13 58:11 58:15 59:1,25 starts 12:4,14 16:9 49:12 57:17 state 1:19 4:4,23 22:21 35:7 42:20,22,25 43:2,6 61:1,2,4 stated 12:10 18:14 21:19 48:1,9 states 1:1 3:8 9:18 10:7 14:2 18:24 22:8 29:19 39:16 40:4 status 41:7,18,19 43:3,19 step 6:24 stiffness 53:9,14 53:21 stipulation 18:14 stoplights 10:11 10:12 11:6 Street 1:24 2:5,13 62:3 63:2 64:2 Strike 35:4 48:25 subscribed 61:9 subset 38:15 45:21,23 subsets 48:18 substantial 9:11 sufficient 7:9 Suite 1:24 2:6 63:2 64:2 summary 33:9 sun 13:6 18:25 sunlight 14:23 supervision 61:8 sure 4:5 6:4 8:22	16:8 32:7 33:3 40:2 44:6 46:2 58:22,24 surface 19:20 28:12 29:5 30:16 34:2,11 39:20 40:8,24 42:5,9,13,17 43:7,12,16,21 46:1,6 47:4 49:3,7 51:4,13 54:8 56:1,11 57:3 58:17 59:3 surrounding 12:23,24 Sutcliffe 2:12 4:8 62:2 sworn 4:13,18 61:5,9 system 15:11,23 16:3,10 44:22 T T 2:1 take 7:18,19,21 8:1 39:3 57:23 58:22 taken 1:16 6:7 39:9 61:13 talk 6:16 23:23 35:10,12 talked 35:13 talking 27:18 57:19 talks 11:5 26:4,5 29:15 36:6 59:10 teach 10:8 techniques 45:24 48:24 49:1 telemetry 11:1 15:1,12 tell 6:10 16:6 18:20 temperature 10:10 14:25 16:19	ten-minute 39:3 term 26:16 44:17 55:4 terms 9:19 11:21 16:20 35:22 terrain 22:11,23 23:24 24:11,12 24:13,15,17,19 24:20 26:1,4,16 26:19,24 Tesla 1:2 4:6 62:6 63:7 64:8 testified 4:20 21:21 testify 4:18 8:8 61:5 testimony 8:5 33:5 47:21 61:8 Texas 1:19 4:11 61:1,3 thank 4:14,16 50:14 60:13 thing 7:24 17:21 18:3,10 19:6,11 21:23 24:13,18 24:24 25:4,8,22 27:7,13,24 29:10 30:4,7 32:5 33:11,20 35:16 40:11 45:3,9,14,19 48:15,21 50:4,6 50:18 52:10,12 53:16,19 55:12 55:14 things 11:12 13:20 16:21 31:17 32:8 35:14 46:21 57:19,25 think 8:20 23:19 33:9 45:6 47:10 three 27:21 time 4:2,3 7:13 7:13 9:10 14:22 23:14 35:2 38:25 39:2
---	---	--	---	---

58:22 61:10 62:13 times 5:24 6:1 38:8 timing 10:12 tire 32:24,25,25 32:25 33:7,7,8 33:10,21,21 34:2,14 35:24 36:1,3,6 43:24 44:2,4,13,17,17 44:18,20,24,25 45:1,3,8,13,23 45:24 46:4 47:2 47:10,16,16,18 47:20 48:3,5,5 48:8,13,18,22 49:6 52:8,14,21 53:2,6,8,9,10 53:11,12,13,16 53:19,20,24,25 54:2,3,6,6,10 54:24 55:5,9,15 55:20,21,24 56:4 tire's 47:15,23 tires's 47:10 today 6:13 8:5 21:22 today's 5:3 6:3 9:7 toes 6:24 torque 34:17 touching 61:6 traction 39:17 40:5,13,14,17 40:22 44:21 45:4,7,9,14,18 45:23 46:13,20 48:16,20 50:4,6 50:13,18 51:6 52:10,12 53:17 53:19 55:12,14 56:7 TRADEMARK 1:1 traffic 11:6 12:23	12:24 15:3,24 16:4,11 18:9,10 18:11 29:21 30:1,4,10,14,15 32:9 transcript 60:12 62:9,10 63:11 transcription 63:13,15 transferred 39:18 40:6,18 56:16 57:14 58:6 59:8 translational 23:5 24:6 transmitted 48:6 traveled 28:15,23 TRIAL 1:1 trivial 34:18 true 6:21 52:22 52:23 56:11,13 56:13 58:17 59:3,5 61:8 63:13,15 truth 4:19,19,19 6:10,11,11 61:5 61:6,6 try 6:15,24 7:18 trying 31:24 turn 8:10,23 11:23 12:3 18:16 20:5,22 20:23 22:1 26:8 29:17 36:23 39:13 41:2 49:11 52:24 54:14 56:19 58:10 turning 42:19 49:23,25 50:7 50:19 two 26:23 27:1,1 27:3,20 30:2 31:17 34:21 type 34:25 38:13 38:15,19 typed 7:7 types 24:11 32:15	34:21 35:21 38:6 41:7 Typically 52:8 typo 9:11 U U.S 1:3 5:4 10:16 understand 6:7 7:10,15 11:3 12:20,21 13:7 17:16 24:2,3 28:11 32:7,22 33:5,25 36:7,15 38:3 47:13,14 50:22 52:17 53:24 55:18 understanding 6:3 7:4 14:19 19:16,19 22:22 22:25 23:11 27:19,21 32:18 33:6 43:24 44:2 44:24 47:6,22 48:12 49:19,24 51:24 52:4 53:6 53:11 54:19 55:6 60:2 understood 39:17 40:4 undulating 24:20 unit 36:18,20,22 37:24 38:4,5,13 38:19 United 1:1 3:8 units 38:7,9 upcoming 11:20 upload 8:12 11:24 use 11:9 12:22 13:1,20 14:23 24:8 36:15 57:24 user 29:22 uses 26:15 44:17 utilize 32:2 36:1 V	v 1:3 62:6 63:7 64:8 variation 23:4 variations 14:13 15:1 variety 15:4 vehicle 11:3,3,7 11:19 12:11,17 12:19,23,24 13:2,2,10,20 26:6 29:4,6,20 30:11,15 31:2,5 31:12,14,22 32:16 34:1,4,5 34:6 37:10,14 37:19 45:2,20 47:10,15,19,23 48:5,6,9 51:8 51:16 54:16 55:2,19 57:21 vehicle's 12:12 37:5,9,13 39:20 40:8,23 41:10 41:11,12,15,16 41:17 42:3,4,7 42:9,11,13,15 42:17 43:7,11 43:16,20 46:1,6 47:3 49:3,7,16 49:20,21,25 50:3,11,16,22 51:3,13,17 54:8 55:25 56:10 57:2 58:16 59:2 vehicles 14:24 16:19 velocity 10:11 12:18 14:25 18:25 23:7 34:22,24 49:22 52:1,7,13 version 5:11 versus 24:20 35:22 vibration 22:13 22:20,21,23 23:1,2,3,8,10	23:11,21 24:1,3 24:9,14,21 25:4 25:8,10,18,20 26:2,5,7 27:8 27:13,15,17,23 27:25 28:4,8 29:6 30:5,8,11 30:20 31:1,10 31:14,22 32:2,5 32:11,16 33:12 33:17,17,19 34:6,19,24 35:2 35:3,6,9,11,14 35:17,19,24 36:2,4,8,11,13 36:16 37:10,14 37:18 vibrations 22:9 22:17 36:9 VIDEOCONF... 1:8,14 visibility 20:13 20:13,17 voltage 42:21 43:1,10 W waive 62:11 want 9:9 33:4 40:1 46:23 60:11 wanted 6:2 Washington 1:24 63:3 64:3 water 19:21 way 28:5,10 33:25 36:7 50:21 52:16 53:23 55:17 ways 14:7,11 17:13 28:3 we'll 39:6 60:16 we're 6:4 21:7 37:21 we've 39:1 58:1 weather 10:10 11:2,2,5,19
--	--	--	--	--

12:17 14:2,3,12 14:24 15:24 16:3,10,14 17:1 17:3,6,12,15,20 17:20 18:2,2,4 18:24 19:4 20:14,15,17 21:16 29:22 30:2,7,25 31:4 31:5 32:9 weather-related 10:24 17:22 weather-type 15:2 West 2:13 62:3 wet 19:18,20 wheel 34:16 46:11,18,24 48:8 50:12 51:8 51:20,24 52:1,5 52:9,17,18,20 wheel/tire 52:2 wheels 39:20 40:8 40:23 42:4,9,13 42:17 43:7,12 43:16,20 46:1,6 47:4 49:3,7 51:4,13,17 54:8 54:11 55:25 56:4,10 57:2 58:16 59:2 wheels/tire 52:7 whereof 61:18 wind 10:10,10 11:19,20 12:17 12:18 14:25 16:19 18:24 windshield 19:17 wit 61:5 witness 1:15 4:12 4:13 39:5 61:9 61:9,18 62:10 63:8,18 64:9 working 23:15 36:6 writing 61:8 written 12:2	62:22 X X 3:1 Y Yeah 17:25 39:25 40:2 56:23 57:10 York 2:13,13 62:4 Z 0 1 1 49:12,13 56:9 61:11 1:10 39:6 1:11 39:9,11 1:46 1:18 60:20 10 39:5 52:25 10,850,616 1:4 5:5 10/31/26 61:25 100 28:15,23 10019 2:13 62:4 1004 3:8 10:17 11:23 12:1 26:9 41:2 106 22:2,4,7 11 53:2 54:14 12 3:8 14:9 20:7,9 30:17,23 31:7 12:02 1:18 4:3 61:4 12:59 39:8,9 129 39:14 40:3 13 26:9,11,14 29:17 1730 1:24 63:2 64:2 19th 9:3 2 20 14:10 2001 3:11 8:10,15	20036 1:24 63:3 64:3 202 1:25 63:4 202)-232-0646 62:15 202)232-0646 64:4 2024 9:3 2024-00630 5:4 2025 1:9,17 61:4 61:19 62:6,20 63:9 64:10 21 18:18,21 20:24 21:1,1,7 36:23 36:25,25 37:23 58:11,15 59:1 59:25 212 2:14 22 15:10 16:8 232-0646 1:25 63:4 26 1:9 62:6 63:9 64:10 26th 1:17 61:4 29 18:18,21 20:24 21:2,3,7 37:23 58:12,15 59:1 59:25 2nd 61:19 3 3 11:17,18 12:4 12:14,15 41:4 32 61:11 38 44:13 4 4 3:2 41:3 49:13 51:19 52:24 54:14 56:9 400 2:6 41 12:5,15 56:21 56:22 57:1,13 42 9:15,18 36:23 36:25 47 18:23 48 8:23 21:14	5 5 28:14,15 41:9 50 11:17,18 500 2:5 506-3596 2:14 51 2:13 11:18 12:24 62:3 52 11:18 52nd 2:13 62:3 53 11:18 54 11:18 12:16 56 15:22 57 26:10,12,14 5729 61:24 6 6 28:23,24 49:15 51:19 616 5:6,6,11 8:11 9:19 32:19,21 44:3,5,9,25 47:7 51:25 52:6 53:7,12 54:20 55:8 62 60:1 650 2:7 35:12 37:4 54:25 66 29:17 7 7 5:15 42:20 44:12 76 10:4,7 8 8 3:11 14:9,9,10 16:8 20:6,8,9 30:17,23 31:7 31:11,11 34:21 56:20,22 57:1 57:13 8,712,650 3:9 5:13 10:16 812 1:24 63:2 64:2 839-5070 2:7	9 9 21:1 94063 2:7
---	--	--	--	---