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COMMITTEE ON ENERGY AND COMMERCE,
U.S. HOUSE OF REPRESENTATIVES,
WASHINGTON, D.C.

CONTINUED INTERVIEW OF: SHUKRI SOURI

Thursday, May 13, 2010

Washington, D.C.

The interview in the above matter continued at 316 Ford
House Office Building, commencing at 9:30 a.m.

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Appearances:

For the COMMITTEE ON ENERGY AND COMMERCE:

- DAVID J. LEVISS, Chief Oversight Counsel
- BRIAN A. COHEN, Senior Investigator and Policy Advisor
- ANNE HARDEN TINDALL, Counsel
- MOLLY GULLAND GASTON, Counsel
- ALISON L. CASSADY, Professional Staff Member
- KAREN E. CHRISTIAN, Minority Counsel
- MELISSA BARTLETT, Minority Counsel
- KEVIN M. KOHL, Minority Professional Staff Member

For EXPONENT:

JAMES J. FICENEC
 Sellar Hazard Manning Ficenec & Lai
 1800 Sutter Street, Suite 460
 Concord, California 94520

1 Ms. Gaston. Good morning. Thank you for joining us
2 again this morning. I think instead of going through all the
3 directions that we went through yesterday, I will just ask if
4 you remember the directions that we discussed yesterday and
5 if you agree to them in the same way you did yesterday. We
6 would be happy to go through them again.

7 Mr. Souri. That is all right. I understand.

8 Ms. Gaston. Could you please state your full name for
9 the record again?

10 Mr. Souri. Shukri Souri.

11 Ms. Gaston. My name is Molly Gaston. I am counsel for
12 the Committee on Energy and Commerce. I think we will just
13 introduce ourselves again.

14 Mr. Ficenec. James Ficenec, counsel for Exponent.

15 Ms. Cassady. Allison Cassady, professional staff with
16 the committee.

17 Ms. Tindall. Ann Tindall, counsel with the committee.

18 Mr. Cohen. Brian Cohen, senior investigator and policy
19 adviser for the committee.

20 Mr. Kohl. Kevin Kohl, professional staff for the
21 minority.

22 Ms. Christian. Karen Christian, counsel for the
23 minority.

24 Ms. Bartlett. Melissa Bartlett, counsel for the
25 minority.

EXAMINATION

1
2 BY MS. GASTON:

3 Q I would like to start out today with Exhibit 5,
4 which is Evaluation of the Gilbert Demonstration. This was
5 provided to the committee by Exponent, and it is Bates
6 stamped EXP01575.

7 [Souri Exhibit No. 5
8 was marked for identification.]

9 BY MS. GASTON:

10 Q Dr. Souri, was it Exponent's idea to conduct this
11 evaluation?

12 A We were asked to conduct the evaluation.

13 Q By whom were you asked?

14 A I believe that is in the report, so we were
15 asked -- my understanding is by Toyota or Toyota's counsel.

16 Q Okay. And do you remember if it was Toyota or
17 Bowman & Brooke?

18 A I don't remember exactly, but I think the beginning
19 of the report says prepared for Bowman & Brooke, attorneys
20 for Toyota Motor Corporation.

21 Q Okay. Thank you. And how did Bowman & Brooke
22 convey its request that Exponent evaluate Professor Gilbert's
23 experiment?

24 A Again, I don't know exactly how that occurred, but
25 it was conveyed to us as a team at Exponent to go ahead and

1 evaluate Dr. Gilbert's demonstration.

2 Q Okay. If that request was conveyed in any way that
3 was documented, whether e-mail, letter, anything like that,
4 the committee would ask that that be produced as responsive
5 to its request.

6 Were you an author of this report, Dr. Sourji?

7 A I was one of the coauthors.

8 Q And who were the other authors?

9 A There were contributions by Dr. Matt Schwall.
10 There were contributions by Dr. Subodh Medhekar. There were
11 contributions by Dr. Paul Taylor, as far as I can remember.

12 Q Thank you. And in the webinar demonstration in
13 which Exponent described how it created Professor Gilbert's
14 experiment, Dr. Schwall said that the experiments Exponent
15 conducted on cars made by manufacturers other than Toyota
16 were "similar to those PG conducted on Toyotas."

17 Can you please describe the differences between
18 Professor Gilbert's experiment and Exponent's work on other
19 manufacturers' vehicles?

20 A Yes. I think I understand the question. The
21 differences were explicitly described in the report, and the
22 differences weren't just between Toyota and non-Toyota makes.
23 Even within the Toyota models there were some slight
24 differences.

25 So, specifically Dr. Gilbert's demonstration

1 involved -- one of the steps in his demonstration involved
2 applying a 5-volt power directly to one of the VPA signals,
3 specifically I believe VPA-2. In our testing, we discovered
4 that in certain Toyota vehicles, such as I believe the
5 Avalon, as well as non-Toyota vehicles, as soon as that
6 connection is made between one of the pedal sensors and the
7 5-volt line, in some cases it would immediately throw what is
8 known as the DTC code, diagnostic trouble code. But we
9 discovered that a small resistance added between the 5-volt
10 line and one of those VPA lines would result in a situation
11 that Dr. Gilbert demonstrated, which is a sudden unintended
12 acceleration based on the sequence of events that he
13 performed.

14 So, just to be clear, in the Camry there was no need for
15 that additional resistor. For the Avalon, there was a need,
16 and I believe we specify exactly what that value is. I
17 believe it was about 100 ohms. In the non-Toyota vehicles,
18 in some cases it required 50 ohms. In other cases it
19 required 100 ohms.

20 BY MS. TINDALL:

21 Q So the only difference was in the ohms necessary?

22 A Precisely. To achieve the exact same outcome as
23 Dr. Gilbert demonstrated. I believe also in the report we
24 say that if you add different values, you will get anomalous
25 behavior, but not exactly as Dr. Gilbert demonstrated. So we

1 were trying to achieve exactly what Dr. Gilbert achieved.

2 Q But if you had followed the steps exactly as Dr.
3 Gilbert had done, would you have received the same results in
4 the other vehicles?

5 A So the answer is we did follow exactly what Dr.
6 Gilbert did, and in some cases, such as in the Camry, it
7 replicated his demonstration. In other vehicles, it threw an
8 ETC code. So by adding this additional resistor, we were
9 able to replicate what Dr. Gilbert achieved.

10 So it is the same exact reengineered circuit that he
11 applied, just with an added component simulating an
12 additional resistance between the 5-volt and VPA-2.

13 Q That was necessary on which vehicle? On all
14 vehicles except the Avalon?

15 A No. It was not necessary on the Camry, it was
16 necessary on the Avalon, and it was necessary on some of the
17 non-Toyota vehicles. We do list them in detail in the
18 report. And in some cases it was 50 ohms, in some cases it
19 was 100 ohms.

20 Q Okay.

21 BY MS. GASTON:

22 Q So Exponent was able to duplicate Professor
23 Gilbert's experiment exactly as he described in his report?

24 A Yes, we were.

25 Q Did Exponent consider using Professor Gilbert's

1 exact method in the webinar?

2 A We did. Not only did we consider it, we did
3 exactly as he did.

4 BY MS. TINDALL:

5 Q On the Camry?

6 A On the Camry, yes.

7 BY MS. GASTON:

8 Q Then you used the variation with different ohms on
9 the other cars?

10 A So with the other cars, it was his exact circuitry,
11 with the additional component between the 5-volt and the
12 VPA-2.

13 Q In every other car on the webinar, was that
14 modification made with the ohms?

15 BY MS. TINDALL:

16 Q With the additional resistor?

17 A I believe so. I would have to check the report.
18 There may have been a vehicle where that was not necessary,
19 but I would have to go through it and get you exactly whether
20 or not that was the case.

21 BY MS. GASTON:

22 Q In Toyota and Exponent's webinar, Dr. Gerdes said
23 "Professor Gilbert was in no way wrong" to run the
24 experiments described in the Gilbert report as the first step
25 in researching sudden unintended acceleration. Dr. Gerdes

1 went on to say that it is "worthwhile to search for evidence
2 of resistive shorts and other rare events necessary to
3 produce" the result Professor Gilbert discovered.

4 Has Exponent done that?

5 A Has --

6 Q Sure. Has Exponent searched for evidence of
7 resistive shorts?

8 A Yes. Absolutely.

9 Q Can you describe what Exponent has done?

10 A Sure. Absolutely. So resistive shorts can take a
11 variety of forms. It could occur due to dendritic growth,
12 due to contamination of the circuit board inside the ECU. It
13 could occur again due to contamination within the connectors.
14 It could occur due to arching mechanisms, where you have a
15 dielectric breakdown between the wires or in the connector or
16 even the PCD on the ECU. It could occur due to what is known
17 as tin whisker growth. Tin whisker growth is something that
18 is known to occur in lead-free processes during soldering
19 processes. So we looked and studied for all those events.

20 And the thing about these mechanisms --

21 BY MS. TINDALL:

22 Q Could I interrupt you quickly? You said you looked
23 and studied all these events. When was that work complete?

24 A That work is -- so I wouldn't characterize it as
25 complete. Certainly by the time we wrote this report, we had

1 studied a number of parts and components that we had acquired
2 looking for evidence of such mechanisms. We did not find
3 any. But that work still continues, because --

4 Q Is that work described in the report?

5 A Yes.

6 Q Okay. Can you point to where in the report the
7 discussion of arching or tin whiskers or any of that appears?

8 A Absolutely. Certainly. So, for example, in
9 chapter 4 there is a section 4.10 titled "Compromise of the
10 Insulating Capacity of Conductors and Electrical Connection
11 Mechanisms" where we detail the type of failures that would
12 be required. So it starts at page 17 and goes on to 19.

13 We also have it --

14 BY MS. GASTON:

15 Q Can I just ask a question about that? You have
16 described in these pages, I believe, the kinds of failures
17 that are possible. I don't know that you discuss what
18 investigation you did to see whether it was present.

19 A Sure. So what we do in the previous sections where
20 we discuss loss of insulation from the various wiring,
21 obtaining a specific resistive short. So I am talking about
22 pages 10, 11, 12, 13, have descriptions. If I may point you,
23 for instance, on page 12, the second sentence, it says, "No
24 such observations were made on any of the used ECMs,
25 connectors or wiring harnesses inspected to date."

1 Q Sure. Is there a description in this report of
2 what inspections you did do of ECMs, connectors or wiring
3 harnesses?

4 A In the section where we talked about the mechanisms
5 themselves, we describe what kind of residues, visible marks,
6 would be detected.

7 Ms. Tindall. Would be, but --

8 Mr. Souri. So if you are asking -- so if I understand
9 the question, we detail how it would be observable. So for
10 instance if there was arching, you would see visible marks.

11 BY MS. GASTON:

12 Q Could you point me to the place in this report
13 where you describe what you did to look for those things, how
14 many ECMs, connectors or wiring harnesses you inspected,
15 where you got those ECMs, connectors, wiring harnesses.

16 Ms. Tindall. Where any reports of sudden unintended
17 acceleration, what was your sample for this investigation?

18 Mr. Souri. I understand. That level of detail is not
19 included in the report. We had obtained some parts, used
20 parts and new parts to compare, to use as a control sample.
21 That detail is not in there. But we did perform optical
22 inspections and microscopy consistent with what I describe as
23 the type of evidence that you should see. So if we say it
24 would leave visible marks behind, then you would look at it
25 visually to inspect it. We did not see any evidence of that.

1 So that is what I was referring to in the report.

2

EXAMINATION

3

BY MR. COHEN:

4

Q Let's take tin whisker growth as an example. It is something I never heard about, so I am interested in it.

5

6

Can you describe to us in detail the protocol you used to determine if tin whisker growth could result in a short in the Toyota system similar to that described by Dr. Gilbert?

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A That is a broad question, but I am going to address it for you in terms of our test protocol.

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Tin whisker growth is something that we discuss and we look for whenever there is a lead-free solder process, and it is just a mechanism that happens to be related to the solder that is made out of lead-free materials. In certain cases the tin whiskers can grow out of one of the solder joints and could make an electrical short to the pin nearby. So what we did is we took, and we continue to investigate this, a large number of ECMs that we open up and that we perform optical inspection on a pin-by-pin basis to determine whether or not there is any evidence of tin whisker growth. That is one step.

21

22

Another step --

23

24

Q And to clarify, you say a large number of ECMs. How many ECMs are you talking about?

25

A We are talking on the order of -- I would have to

1 go back and check, but I think it is on the order of
2 hundreds.

3 BY MS. TINDALL:

4 Q Did any of them come from vehicles that reported
5 sudden unintended acceleration?

6 A That I don't know. We have begun to acquire
7 vehicles that have been reported to have experienced sudden
8 unintended acceleration. At the time of our analysis of Dr.
9 Gilbert's demonstration, I am not quite sure we had those
10 parts at that time.

11 BY MR. COHEN:

12 Q Setting aside whether you had the parts or not, are
13 you aware of whether any parts that were involved -- that
14 came from cars that had sudden unintended acceleration were
15 involved in your study, in your analysis of the Gilbert
16 report?

17 A At that time of the Gilbert report, I cannot tell
18 you that I am aware of any that were involved. They may have
19 been.

20 Q Okay.

21 A Now, would you like me to continue with the test
22 group?

23 Q Yes.

24 A So another test protocol to detect for tin whisker
25 growth is to induce them, and the way to induce them is to

1 run them through a lifetime cycle test where you induce
2 temperature cycles for a period of time. So we are talking
3 about cycling between minus some temperature, I can't
4 remember exactly, minus 50 degrees, to 100-something degrees
5 Celsius, recycle it hundreds or thousands of times for a
6 period of hours, and then you bring the devices down to room
7 temperature and then you cycle them again and then you make
8 optical observations after the test to see if there is any
9 indication of tin whisker growth.

10 In some cases there is tin whisker growth, but it all
11 depends on what the maximum growth you are going to get in
12 terms of lengths and whether or not the pin-to-pin pitches
13 are in the order where you can get electrical shorts. So we
14 have to study also what components have such pitches, is lead
15 free soldering used in areas where the pin-to-pin pitch is
16 short enough that you might get a short circuit or resistive
17 short.

18 In other cases there are ways to ameliorate for that
19 that we have studied as well. One way to ameliorate or to
20 address tin whisker growth is to have a coating underneath
21 the solder joint that is made of nickel-gold-palladium. I
22 think that would be one of the tactics that actually
23 increases the energy barrier or the activation energy to form
24 tin whisker growth.

25 So it is a more complicated process as to where do they

1 use such techniques where they can address potential tin
2 whisker growth, and where they don't need to because the
3 pin-to-pin pitch is large enough where you cannot get that
4 kind of event.

5 BY MS. TINDALL:

6 Q Is this protocol you are describing written down
7 anywhere?

8 A This is work in progress. It is certainly in the
9 process of being written. As I said yesterday, it is part of
10 an incomplete document we are putting together that will be
11 finalized as our report and will be released.

12 BY MR. COHEN:

13 Q We can expect to see this information you described
14 that is in the draft report right now?

15 A Yes. I cannot tell you that I have seen all the
16 different sections, but I anticipate once it is complete that
17 we will release it and you will see all the details.

18 Q Okay.

19 EXAMINATION

20 BY MR. KOHL:

21 Q So what I understand thus far, I am referring to 18
22 when you talk about the harness insulation breakdown, you are
23 identifying ways in which a short could happen, but you say
24 that it wouldn't happen without leaving a trace of existence,
25 correct?

1 A Yes, correct.

2 Q This is a two part question: One, does Toyota go
3 in and look for insulation shorts? Do you know if Toyota
4 goes and does this when they have a report of sudden
5 unintended acceleration, do they go in and say look at every
6 wire and see if there is a short; and, second, will Exponent
7 in your analysis say this is a way in which you should
8 inspect a car that has sudden unintended acceleration for
9 ways in which this may occur?

10 A So in terms of what Toyota does, I cannot tell you
11 exactly what they do. But certainly when we inspect a
12 vehicle, that is something we certainly look for, and I
13 believe on our recent inspection of a vehicle that was
14 reported to have experienced SUA, we actually went out there
15 and measured the resistances between the different electrical
16 connections on the ECU coming in from the pedal sensor, among
17 other places.

18 So we definitely do that ourselves. The other thing I
19 would like to point out is -- I think the other part of your
20 question is do we --

21 Q Your final work product. Will that include
22 recommendations of the ways in which Toyota can, let's say,
23 better inspect the cars or have a more comprehensive
24 inspection? They told us ways in which they -- I believe it
25 was a form now that they go through to look for cars that

1 have reports of that. They have an extra form that they go
2 through different steps. Is part of your report going to
3 recommend ways in which they can go through it?

4 A So to answer your question immediately, if we are
5 asked to offer such recommendations, we would be more than
6 happy to. So far, my understanding is our goal is to
7 identify any potential set of root causes or set of
8 conditions that could result in the reported sudden
9 unintended accelerations. So if asked, we will certainly
10 offer such recommendations.

11 But if I may just complete one other thing, we were
12 talking about a very specific resistive short here between
13 specific pairs of wires. The connector has six electrical
14 wires coming into it. So there is no reason to believe that
15 one particular pair are more predominant or more vulnerable
16 than other pairs. So if such evidence, if we had seen any
17 evidence of such corrosion or arching or breakdown that could
18 result in a resistive short, it could have happened between
19 any other pin pairs.

20 The point I am trying to make is we would be seeing DTCs
21 all over the place of incipient faults in the process of
22 forming, whether it is between other pairs of wires or
23 resistive shorts of very different values.

24 In Dr. Gilbert's demonstration, it had to be a very
25 specific resistance value, which in nature is very difficult

1 to arrive at from an infinite resistance characterizing an
2 open circuit between the wires, which is what you would want,
3 all the way down to a very specific 200 ohms. Typically the
4 formation of a resistive short is something that evolves over
5 time, and you would see a decrease in resistances. That
6 would generate other DTCs along the way that have not been
7 detected or reproduced.

8 BY MS. GASTON:

9 Q Is there a description of the inspections that you
10 did of ECMs, connectors or wiring harnesses in detail written
11 down outside of this report?

12 A Not that I recall. Possibly. But I would have to
13 check for you.

14 Q And then sort of on the discussion of sort of the
15 wires and the insulation. On page 10 of the report you
16 describe that a compromise of insulating capacity of the
17 VPA-1 conductor is required to enable formation of an
18 electrically conductive connection between VPA-1 and VPA-2.

19 A Yes. You just read the first sentence.

20 Q Right. So the signal VPA-1 goes into a connector
21 and a printed circuit board, is that correct?

22 A Yes. Well, it is a wire that comes from the pedal.
23 It is connected to the sensors. It goes through a connector
24 that is attached to the ECU on the printed circuit board.

25 Q And those locations, the signal is not insulated by

1 wire insulation, is that correct?

2 A At which location?

3 Q At the connector and the printed circuit board.

4 A So they are insulated before the connector, they
5 are insulated inside the connector, and between the connector
6 and the printed circuit board, the wires are physically
7 separated. They are traced on to a printed circuit board.
8 So you have an insulation, the dielectric that is in between
9 them. There is also what we call a printed circuit board
10 mask material, which is also a dielectric. It is an
11 insulator that is coating the entire board. So you will have
12 a physical separation, a non-conducting separation between
13 these traces, as well as a coating on top of them that is an
14 insulator.

15 BY MS. TINDALL:

16 Q So you are saying that they are insulated there?

17 A They are insulated in the printed circuit board,
18 yes. And to the extent there is any breakdown or any
19 contamination, then that would certainly leave visible marks
20 behind. If there is a resistive short in the process of
21 forming, you would detect that, not to mention optically,
22 just simply visually. And not to mention the fact that in
23 the process of forming the resistive short, you would expect
24 to see other DTCs as well, which we have not seen.

25

1 BY MS. GASTON:

2 Q At the printed circuit board, are the wires
3 insulated in the same way as they are insulated as you
4 describe on page 10?

5 A No, they are not insulated in the same way. When
6 you are talking about the actual wires that come in, there is
7 a PVC insulator that insulates the conductors. On the
8 printed circuit board, it is a completely different
9 technology. We are talking about traces on a printed circuit
10 board, so these are copper traces that are inlaid, etched.
11 The actual PVC is etched, and then you get the deposition
12 process of the actual copper and its pattern so that you get
13 individual traces that are separated by a dielectric. So the
14 insulation is different. But there is insulation
15 nevertheless.

16 Q What I am envisioning is in the webinar, I believe
17 it was Dr. Schwall demonstrated that to perform Dr. Gilbert's
18 experiment, one would need to take, for instance, an Exacto
19 knife and shave the PVC insulation off of the wires.

20 A Correct. Yes.

21 Q That is not necessary at the printed circuit board
22 because it is not the same sort of insulation?

23 A It would still be necessary at the printed circuit
24 board, because you still have to get access to the connector.
25 The point of the webinar was to demonstrate what Dr. Gilbert

1 had done and what would be required in reality to achieve
2 what Dr. Gilbert had done.

3 So if you were to do it on the printed circuit board,
4 you would still have to cut through the printed circuit board
5 to attach. It would actually be even more difficult, because
6 there is nothing to grip on to on the printed circuit board
7 to connect your wires with probes and jumper wires, as Dr.
8 Gilbert had done. So that would be even more difficult to
9 do.

10 BY MS. TINDALL:

11 Q I take the discussion we had earlier about the
12 investigation of component parts that went into this study
13 and that is ongoing in the search for resistive shorts to
14 mean that you don't actually think that to get the result
15 that Dr. Gilbert got in a lab in the real world, you would
16 need an Exacto knife. You are saying it is a rare event, not
17 that for this to occur somebody actually has to sabotage a
18 vehicle?

19 A No, we have not stopped there. We discussed in our
20 report not just that you have to -- the point of the Exacto
21 knife that Dr. Gilbert used was to demonstrate a need to
22 breach the insulation on the wires. So now we took it to the
23 next step. I mean, how do you get a breach of insulation,
24 any insulation, regardless of whether it is in the wires,
25 between the wires, in the connector or on the printed circuit

1 board. That would necessarily require some sort of a breach
2 of the insulation material.

3 Q There are mechanisms that could create such a
4 breach in the real world absent use of an Exacto knife?

5 A We discussed those clearly in our report, yes, and
6 we discussed the possibilities of them occurring in that
7 sequence, in that number of events.

8 BY MS. GASTON:

9 Q Right. In fact Exponent says in the report on page
10 vi, Exponent says it evaluated Professor Gilbert's experiment
11 by setting the required sequence of events in the context of
12 the real world.

13 Can you describe all of the possible real world
14 sequences of events you studied?

15 A Yes. So we actually address that. There is a
16 section -- I believe I answered some of the parts of your
17 question by pointing you to the relevant sections of the
18 report that discuss the arching, discuss the contamination.

19 Q Right. Those are possible real world events that
20 could have the same effect as Dr. Gilbert's experiment?

21 A They are possible mechanisms that would
22 occur -- that would have to occur in the real world as
23 opposed to the Exacto knife, that would have to occur a
24 number of times on different conductors, and we developed an
25 analysis that discusses exactly how many times that would

1 have to occur.

2 Q Right. What I am asking is what sort of
3 statistical analysis or other investigation did you do to
4 determine the likelihood of this happening in the real world?
5 Because I believe several times in this report you
6 characterized that as very unlikely. What statistical
7 analysis did you do to come up with that?

8 BY MS. TINDALL:

9 Q Or physical analysis. Either.

10 A Right. Sure. There is a section where we discuss
11 here on page 14 the fault tree analysis of Dr. Gilbert's
12 protocol. So if you go to page 14, we discuss -- so the way
13 that we approach the statistical analysis is to perform a
14 fault tree analysis so we can identify exactly how many
15 faults would be required in the real world to achieve Dr.
16 Gilbert's result. So we identified six separate mechanical
17 events that have electrical consequences, and beyond that,
18 these six separate events have to occur in a specific
19 sequence.

20 So the purpose of the fault tree analysis, which I
21 believe we have -- yes, on page 9, it shows you the fault
22 tree. It shows you all the different events that would be
23 required in order to achieve the top event, which is Dr.
24 Gilbert's event.

25 Q I don't see any probability on the fault tree

1 analysis though.

2 A The way that you read a fault tree diagram is the
3 whole purpose of it is to know how many faults would be
4 required. So when engineers talk about single point failure,
5 that means -- single point failures, there is a good chance
6 that things could happen in a single fault event, so that is
7 something we have to protect against. Double fault failures,
8 things are getting really unlikely because you require two
9 separate independent events to occur, and engineers sometimes
10 account for double fault events, but, you know, not all the
11 time. Once you start getting into three or triple fault
12 events, or events that require six different faults, we are
13 talking about getting into the unrealistic.

14 So this is one way of looking at the statistical
15 analysis we have performed.

16 BY MS. GASTON:

17 Q So is this the only statistical analysis that
18 Exponent performed to determine the likelihood of the Gilbert
19 experiment occurring in the real world?

20 A In the scientific community, this is --

21 Q Right. But is this the only one?

22 A This is the way that we have performed our
23 statistical analysis.

24 Q And this is the only way you have performed your
25 statistical analysis?

1 A This is the only way that we have performed it at
2 that time, yes.

3 Q Have you performed it different ways since?

4 A Not that I know of, no. And I will mention that in
5 our report we discuss how typically the industry looks at
6 fault tree analyses, and we say, for example, on page 14
7 having such a sequence of independent events, all six of them
8 occur in the field, is extraordinarily unlikely, and we refer
9 to some of the ground rules that NASA looks at for fault tree
10 construction where they say occurrences of such wiring faults
11 is so low that NASA instructs not to model it. So there is
12 an understanding that anything that goes beyond two or three,
13 or in the NASA case, anything that involves faults
14 between -- wiring faults such as shorts to ground or shorts
15 to power, it is so unlikely that you don't model for it.

16 BY MS. TINDALL:

17 Q It seems to me that the ultimate likelihood of an
18 event, if several faults are involved, is at least somewhat
19 dependent on a likelihood of the six events that lead up to
20 it. So there would have to be some assessment to determine
21 whether something is extraordinarily unlikely and utterly
22 unrealistic, or just very unlikely, but could occur rarely.
23 There would have to be some analysis of the likelihood of the
24 various events involved.

25 A I see. So you are talking about why aren't there

1 specific numbers of probabilities attached to each one of
2 those?

3 Q Sure. Or some independent assessment of whether,
4 you know, whether the event is likely or not. I don't know
5 that you need to assign a percentage.

6 A But, again, I think the problem is I am trying to
7 explain or get over an engineering barrier by trying to
8 explain to you that even if you had an event that is deemed
9 likely, adding another event that is equally likely to
10 achieve both of them, you would have to multiply their
11 probabilities.

12 Q Sure. No, I totally understand that. What I am
13 saying is if you had six very likely events, the ultimate
14 probability of the result of those six likely events is going
15 to be higher than if you had six extremely unlikely events,
16 the likelihood of the ultimate event occurring there. I
17 mean, the likelihood between those two scenarios is
18 different, and I am wondering if fault tree analysis takes
19 into account those differences?

20 I mean, have you ever seen a fault tree analysis that
21 assigns probability to the individual events that would be
22 necessary?

23 A I can't recall if -- there may be. I don't
24 remember, sitting here, if there are probabilities attached
25 to individual events. That usually is done as a separate

1 analysis. But really we are talking about relative issues
2 here. At the end of the day when manufacturers or designers
3 design a product, the point they ask themselves is how many
4 events do we account for, how many possible faults do we
5 account for in designing our product. And when you talked
6 about a high probability of failure, I mean, failure
7 analysis, the probability of a component failing, it depends,
8 of course, what failure we are talking about. If it is a
9 capacitor failing or are we talking about parts in a million. .

10 So it is not like we are talking about the difference
11 between 1 percent and 50 percent. We are talking about parts
12 in millions, at the very best. So now you have not --

13 Q So all failures, you view all potential failures in
14 vehicles as rare? Is that what' are saying?

15 A No. I am talking about failures that involve six
16 independent events occurring in a specific sequence in time,
17 when each one of them we are talking about probably is
18 occurring in the order of one in a million, is going to be
19 extremely rare.

20 Q But I am asking how you arrived at that one in a
21 million for any one of those. Do you have to arrive at one
22 in a million for any one of those faults? Do you have to do
23 any analysis, to do a sufficient fault analysis, do you have
24 to do any analysis of the probability of the individual
25 faults involved, or is the fact that there are many faults

1 involved, standing alone, enough to say this isn't going to
2 happen?

3 A The fact that there are so many of them having to
4 occur on their own is certainly from a failure analysis
5 perspective and from a design engineering perspective
6 sufficient to say that this isn't something that requires
7 more than three events to occur and they have to occur in a
8 specific instance.

9 Q You see three as a sort of tipping point on that?

10 A The reason I say three is because we also
11 considered the fact that it is possible that
12 somebody -- there is something known as a common failure
13 event. So maybe somebody by accident takes a knife or some
14 kind of scalpel and cuts through three wires at the same
15 time. So suddenly now you go from six events to three events
16 because of that common failure mode to induce that breach on
17 three wires, for instance.

18 So we also took that conservative approach and said,
19 okay, even with that conservative approach, we are talking
20 about three separate events that have to occur independently
21 and they have to occur in specific sequence in time. That
22 alone is sufficient for a design engineer to say, you know,
23 double fault events are extremely rare, so going to three or
24 more and having them to occur in a specific sequence in time.
25 This is not a matter where I can have one event happen and

1 then another event happen randomly. They have to occur in a
2 specific sequence.

3 Q Is that analysis described somewhere?

4 A Yes. Absolutely.

5 Q It is encompassed in the fault tree?

6 A It is encompassed in the fault tree. It is
7 encompassed in our description of our fault tree analysis.
8 We talked about the sequence of events having to occur in a
9 specific sequence of time. And it is certainly encompassed
10 in the entirety of the report, yes.

11 Q So I guess at the end of the day what you would say
12 is that the totality of your fault analysis for the event
13 that Dr. Gilbert induced in the lab is reflected in your
14 report?

15 A Yes.

16 Q Okay.

17 BY MS. GASTON:

18 Q Has Exponent examined the warranty data for each
19 Toyota vehicle in which sudden unintended acceleration was a
20 complaint or a suspected problem?

21 A We have examined databases, warranty data bases
22 from Toyota, we have examined databases from NHTSA, we have
23 examined call center records from Toyota. We have examined
24 Canadian --

25 Mr. Ficenech. Was your question with respect to a

1 specific vehicle?

2 Ms. Gaston. No, it was each vehicle.

3 Mr. Souri. So these databases will contain information
4 about all vehicles, all model years, all different model
5 types, and we have analyzed those records.

6 Was that responsive to your question?

7 BY MS. GASTON:

8 Q What has been your finding in terms of -- have you
9 been able to determine anything from the warranty data of
10 vehicles in which sudden unintended acceleration was a
11 complaint?

12 A We are still in the process of analyzing that data,
13 and I would say that we have some understanding of the
14 complaints, of how customers complain. It is not a
15 very -- everybody writes their own description of exactly
16 what happened, so it is very difficult to kind of get
17 extremely verifiable records. But we are doing our best to
18 sort through that data.

19 Q So at this point in time, you say you have an
20 understanding. What is that understanding?

21 A We have an understanding of distributions. I would
22 say, for instance, the ratios of complaints with respect to
23 sudden unintended acceleration between vehicles that are
24 equipped with ETCS-i versus vehicles that are not equipped
25 with ETCS-i. We have seen also information with respect to

1 what we would consider descriptions of long duration reports
2 of SUA versus short duration reports of SUA.

3 So, for instance -- would you like me to continue?

4 Q I think we will probably come back to that. Thank
5 you.

6 BY MR. COHEN:

7 Q Can I ask one quick question to make sure I
8 understand correctly?

9 In a failure analysis, let's say a three-step failure,
10 where you determine there are three steps necessary to cause
11 a failure, the probability of step 1 is 50 percent, the
12 probability of step 2 is 50 percent, and the probability of
13 step 3 is, say, 10 percent.

14 A Yes.

15 Q In that scenario, you would have a 2.5 percent
16 chance of the failure occurring?

17 A Yes.

18 Q Is that correct?

19 A In that particular scenario, you multiply the
20 probabilities.

21 Mr. Ficenec. Is your question that it could occur in
22 any order?

23 Mr. Cohen. Yes.

24 Mr. Souri. Right. As you have described it, simply
25 here we are talking about three independent events that can

1 happen randomly at any time. That would be correct.

2 BY MR. COHEN:

3 Q Okay. So now let's say you have a four-step fault
4 scenario, a probability of 80 percent of the first fault, 50
5 percent for the second, 50 percent for the third, and 80
6 percent for the fourth.

7 A Right.

8 Q You can take a look at the math. My math shows
9 that particular fault would have a 16 percent chance of
10 occurring, is that correct?

11 A According to your assignment of those numbers.

12 Q So that would be a scenario where you have a larger
13 number of steps to create a fault, but the probability of
14 that fault occurring is higher?

15 A Right. But I would characterize your scenario as
16 being even more unrealistic, because I have never seen any
17 part that has a probability of failure of 50 percent, let
18 alone 80 percent. I mean, that would not be a part that I
19 would put on the market.

20 Q I agree. I am using numbers to make the math easy.
21 But my point is, again, that based on the probability of
22 individual events occurring, there are scenarios in which the
23 number of faults necessary for a problem to occur may be
24 higher but the probability of that fault occurring is also
25 higher.

1 A I understand the point you are making. But I would
2 say there is an added complexity --

3 Q Just to clarify, my point is correct?

4 A Your point as you have pointed it out, yes, it is
5 possible. Absolutely.

6 Q But is my point correct? Was my point correct? Is
7 the basic math that I have laid out to you, that a scenario
8 where you have more steps to get to a fault, but the
9 probability of those steps occurring could be higher, that
10 scenario is a possibility, yes?

11 A That particular scenario is a possibility, correct.
12 Can I just add just a few more --

13 Q I know Molly wants to get on.

14 Ms. Gaston. How long is this?

15 Mr. Souri. 30 seconds?

16 Ms. Gaston. Go for it.

17 Mr. Souri. What I wanted to say is that that is a
18 simplistic perspective to look at a fault tree analysis,
19 because events can be either ended or ordered. Events have
20 to also occur in a specific sequence in time, so there is an
21 added complexity there of when particular events have to
22 occur, which would again have to factor into the FTA.

23 Q Do you conclude that Professor Gilbert's theory
24 could not possibly arise in the field?

25 A I think that the way that I would characterize that

1 is that as an engineer I do not like to use the word
2 "impossible." A lot of things are possible. But I would
3 characterize it as unrealistic and extraordinarily unlikely.

4 EXAMINATION

5 BY MS. CHRISTIAN:

6 Q Can I ask a quick question? When you guys began
7 your work, did you go back and do research on when resistive
8 shorts have occurred in electronic throttle control systems
9 where you have seen events? Have resistive shorts occurred
10 in electronic throttle control systems?

11 A Yes, they have occurred. I mean, I have worked
12 personally on those kind of issues. And, again, the way that
13 they occur is not in the way that Dr. Gilbert describes.
14 They occur through a specific progression in time and they go
15 through different values of resistances, the values of which
16 will result in ETCs.

17 Now, the other thing to point out is that while they can
18 occur, they are extremely rare in nature just because of the
19 fact that the way an ECU is constructed, it is constructed to
20 be protected against the environment. I mean, remember,
21 resistive shorts require contamination on the printed circuit
22 board and require moisture inside the chaise or the
23 compartment where the ECU is constructed. That is because
24 contamination and moisture is like water and salt. Water and
25 salt are conductive, and that is how a resistive short

1 develops.

2 BY MS. TINDALL:

3 Q Those are the only ways resistive shorts result?

4 A No. I am just giving you one example. You could
5 get arching. I have referenced other mechanisms. But they
6 are extremely rare to occur, and should they occur, they
7 leave visible signs behind and you will expect to see
8 diagnostic trouble codes.

9 BY MS. CHRISTIAN:

10 Q You said you did research. Where did you find
11 examples of where this occurred in cars?

12 A These are from previous projects that I have
13 personally worked on.

14 Q Okay.

15 A And, you know, recalling actually back, it wasn't
16 an ECU, it was a different component within a vehicle. So I
17 just wanted to clarify that. And the other thing is that my
18 own experience in failure analysis of electronic components,
19 I mean, we have worked on resistive shorts for a very long
20 time.

21 Q So in those cases you looked at in your experience,
22 what kind of things did the driver experience when those
23 things were happening, like arching or contamination? What
24 does the driver notice?

25 A Well, you know, I cannot tell you from experience

1 exactly what the driver would experience just from my memory,
2 but knowing or having knowledge of the system and of the
3 vehicle, number one, you would expect to see -- you would
4 expect the cars, if such an event were to occur, at some
5 point you would expect to see during the developing of that
6 resistor short some kind of a diagnostic trouble code that
7 would send the vehicle into a limp-home mode, which is
8 basically a failsafe mode so that the vehicle cannot
9 accelerate or would allow the driver to drive home or drive
10 to a dealership or garage shop to fix it. So I would expect
11 to see ETCs that would put the driver into and the vehicle
12 into a failsafe mode.

13 Ms. Christian. Okay. Sorry, Molly. Go ahead.

14 BY MS. GASTON:

15 Q All right. I would like to mark as Exhibit 6 this
16 document which is titled "Recreation of the Gilbert
17 Demonstration." It is Bates stamped TOYEC_00215944 and it
18 goes on until TOYEC_00215949.

19 [Souri Exhibit No. 6

20 was marked for identification.]

21 BY MS. GASTON:

22 Q This appears to be an early draft of Exponent's
23 evaluation of Professor Gilbert's demonstration, is that
24 correct?

25 A It appears to be a draft. It is titled "Technical

1 Memorandum, Recreation of Dr. Gilbert's Demonstration on a
2 200X Vehicle."

3 Q Why did Exponent fail to produce this document to
4 the committee?

5 A I wouldn't be able to answer that question.

6 Q Are there other drafts of this report?

7 A I wouldn't know. It would be just speculation on
8 my part. But it could be that this is how it started and
9 ended up as the evaluation of the Gilbert demonstration that
10 is being produced or released as a final report.

11 Q If you will turn to the second page please, in the
12 upper righthand corner the date is stamped February 2010.
13 Can you recall with more specificity the date on which this
14 document was circulated or generated?

15 A No. As a matter of fact, I just want to be clear.
16 I have not seen this specific document before.

17 Q Okay. When you say you haven't seen this specific
18 document before, have you seen other versions of this
19 document?

20 A I don't believe so. To the extent that this
21 document evolved into the final report that was released, I
22 mean, I can recognize some of the figures that appear to be
23 related to the ABC demonstration on TV. I recognize that
24 some of them are also in the final report that was released.
25 But that is about it.

1 Q This document is on Exponent letterhead?

2 A Correct.

3 Q So this document was created by Exponent for Bowman
4 & Brooke, as it says on the first page, prepared by Exponent,
5 prepared for Bowman & Brooke?

6 A I have no reason to dispute that, but I have not
7 seen this document before.

8 Q I would like to direct you again to the second page
9 and to the third full paragraph, which begins "Exponent was
10 asked."

11 A Yes.

12 Q Will you please read that third full paragraph out
13 loud?

14 A Yes. "Exponent was asked whether manipulations on
15 the accelerator pedal of a 200X Xxxxx Xxxxx," which I
16 understand probably means the vehicle model, a blank for the
17 vehicle model, "in a manner comparable to those performed by
18 Mr. Gilbert on the Toyota Avalon, would result in a
19 comparable result. Exponent determined that indeed such
20 manipulations would cause engine revving and an increase in
21 power output in the same vehicle. Further, Exponent found
22 that these manipulations neither triggered a check engine
23 light nor set any diagnostic trouble codes."

24 Q So where you read the X's, that is a blank where
25 the names of non-Toyota cars would be filled in in later

1 drafts?

2 A I don't know if I necessarily read that. It could
3 just be a placeholder for one or more vehicles that we were
4 in the process of testing at that time.

5 Q As of the writing of this draft, Exponent could not
6 name the other cars on which it had recreated Dr. Gilbert's
7 experiment?

8 A Again, I am not sure that that is correct. In this
9 document, it just means it is a placeholder. That doesn't
10 necessarily mean that we don't know what the vehicles were.
11 We were in the process of testing the vehicles.

12 BY MS. TINDALL:

13 Q Did you do any drafting of the report before you
14 tested other vehicles?

15 A I did not, no.

16 BY MS. CHRISTIAN:

17 Q What date specifically? I mean, we know Gilbert's
18 report came out on the 22nd and the hearing was on the 23rd.
19 What date did you guys start? When did you guys start, or
20 when did you hear from Bowman & Brooke you guys need to test
21 what Gilbert did?

22 A I don't remember exactly the date. But there were
23 some discussions between Dr. Gilbert, Toyota and Exponent
24 before his testimony, and I believe certainly before he
25 released the report, and certainly before the ABC

1 demonstration on TV. So there were communications. We
2 knew -- we had an idea of what Dr. Gilbert had done. So it
3 started, I can't remember exactly when, but there were
4 communications before his preliminary report was produced,
5 and so we were engaged in that analysis beforehand.

6 Q Do you remember when you acquired the other
7 manufacturers' cars to start testing?

8 A No, I do not.

9 Q Was that one of the first things you did, or later
10 after you looked at the Avalons and Camrys?

11 A I think we had gone through a process of
12 acquisition of vehicles well beforehand, but I couldn't
13 answer that question.

14 BY MS. TINDALL:

15 Q Well before when?

16 A Since being retained, or even we have vehicles from
17 before. But I wouldn't know exactly the details of that.

18 Q Do you know when you first attempted Dr. Gilbert's
19 experiment on a car other than a Toyota?

20 A Do I know exactly when?

21 Q Within a few days after the hearing?

22 A I believe it was before the hearing. I believe it
23 was before the hearing.

24 BY MS. GASTON:

25 Q Do you know how long before the hearing?

1 A I couldn't say.

2 Q Well, Dr. Gilbert appeared on ABC the evening
3 before the hearing.

4 A Yes.

5 Q Do you know if it was before he appeared on ABC or
6 after he appeared on ABC?

7 A I wouldn't know exactly.

8 Q I think if he appeared on ABC in the evening, you
9 would remember staying up all night to perform the
10 experiment.

11 A Let me put it to you this way. There were several
12 nights that we had stayed up, and we continue to stay up,
13 before Dr. Gilbert's release of his report and after. This
14 is obviously a project that is extremely important, and we
15 are very interested in identifying any potential root causes.
16 So I am not sure that that would be an accurate landmark for
17 me.

18 Q Okay. So in order to recreate Professor Gilbert's
19 experiment, you needed to know how Dr. Gilbert initially
20 performed it, is that correct?

21 A Yes.

22 Q So do you recall if you recreated it by watching
23 the ABC News piece? By speaking with him?

24 A No. As I mentioned to you, we had communications
25 beforehand.

1 BY MS. TINDALL:

2 Q Toyota has represented to us that in your
3 communication with Dr. Gilbert before the ABC News report,
4 you did not get the full explanation of what he had done and
5 that you were unable to recreate unintended acceleration in a
6 vehicle without setting a diagnostic trouble code, until you
7 watched the ABC News story and saw all of the steps that he
8 had to complete. After that point, you were then able to
9 induce sudden unintended acceleration without setting a
10 diagnostic trouble code. Does that comport with your
11 recollection?

12 A It does. It does.

13 Q So until the ABC News story aired, which was on
14 February 22nd, you could not possibly have applied the
15 Gilbert experiment to another manufacturer's vehicle, induce
16 sudden unintended acceleration, and fail to induce a
17 diagnostic trouble code. So necessarily this report was
18 written after February 22nd. Is that a fair statement?

19 A It could be. It sounds logical, so I have no
20 reason to dispute that.

21 Q Okay.

22 BY MS. GASTON:

23 Q I would like to take one step back sort of a few
24 topics ago and ask if you had drafted this report before
25 performing the tests on other vehicles, and you said that you

1 had not.

2 A Correct.

3 Q Did anyone else at Exponent?

4 A Not that I know of. But, I mean, I am assuming
5 since -- if I am going to understand that this is a Exponent
6 report, somebody must have done it.

7 Q Somebody must have performed the
8 experiment -- somebody must have drafted this before they
9 performed the experiment on other cars?

10 A No, that is not what I said. I said that there
11 must have been someone who drafted this.

12 Q Someone at Exponent drafted this.

13 A Right, before I coauthored the report with my
14 sections.

15 Q Okay.

16 BY MS. TINDALL:

17 Q Can you tell us which sections of the report you
18 coauthored?

19 A Certainly.

20 BY MS. GASTON:

21 Q This is looking back at Exhibit 5.

22 A Right. Exhibit 5. So we are looking at chapter 4
23 was my section.

24 Q Can you estimate how much time that you spent
25 preparing for the March 8th webinar?

1 A Not much time at all, unfortunately. I think it
2 was around the weekend, because I think March 8th was a
3 Monday.

4 Q So approximately how many hours?

5 Ms. Tindall. Was this one of those up-all-night
6 scenarios you were describing?

7 Mr. Souri. It may be one of them. I think we needed to
8 get our rest before the webinar. But it may have been
9 12-hour days.

10 BY MS. GASTON:

11 Q And do you know how much time Dr. Schwall spent
12 preparing for it?

13 A I mean, I wouldn't be able to tell you exactly --

14 BY MS. TINDALL:

15 Q Was he around most of the time you were around?

16 A Yes.

17 BY MS. GASTON:

18 Q And how about Dr. Malady?

19 A Dr. Malady, he also was around. I don't think he
20 was as involved in the webinar as Matt and I and Dr. Medhekar
21 were.

22 BY MS. TINDALL:

23 Q Maybe a couple hours a day?

24 A That would be pure speculation on my part.

25

EXAMINATION

1 BY MS. CASSADY:

2 Q You said you were talking about a 12-hour day. Was
3 that just for the weekend? So a couple or 2 days?

4 A Yes.

5 Ms. Gaston. I would like to mark as Exhibit 7 a
6 document produced by Toyota Bates stamped TOYEC_00207059. It
7 is one page. It is titled "DRAFT" at the top.

8 [Souri Exhibit No. 7
9 was marked for identification.]

10 BY MS. GASTON:

11 Q Dr. Souri, have you ever seen this document before?

12 A The writing seems familiar, but I haven't seen
13 this. I don't believe I have seen this particular document.
14 It seems to be discussing Dr. Gilbert's demonstration and
15 Exponent's work related to this.

16 Q Is this document authored by Exponent?

17 A I wouldn't know.

18 Q Does it seem to you to be an Exponent style and
19 does it seem like something Exponent would do? You can go
20 ahead and read it.

21 A It is not conclusive, because I know that Toyota
22 themselves was also performing the same tests alongside with
23 us on other vehicles. It does refer to Exponent, so that
24 would indicate that they were obviously familiar with exactly
25 what it is we had done. But do I know that this is a

1 Exponent-written document? No, I do not.

2

EXAMINATION

3

BY MR. LEVIN:

4

Q You have never seen this document before?

5

6

A I answered earlier saying that the text and the reading of it seems familiar to me. Obviously this is something that is all related to Dr. Gilbert's demonstration and our work related to recreating Dr. Gilbert's demonstration. So it is not that the reading of it is unfamiliar to me, but I cannot just by looking at it tell you if Exponent authored it.

10

11

12

BY MS. TINDALL:

13

14

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17

18

Q I am looking at the third paragraph, the first two sentences. "Exponent applied a similar procedure to a 2008 Honda Accord. This model has a low rate of reports to NHTSA for unintended acceleration. For the Accord, we again cut and breached the insulation on the two wires" and it goes on. Did I read that correctly?

19

A Yes.

20

21

22

Q The subject in the first sentence is "Exponent" and the subject in the second sentence is "we." Is it fair to assume that the "we" drafting this document is Exponent?

23

24

25

A I think that would be one assumption to make. It is quite possible that Toyota also wrote it and referred to Exponent in the first sentence and referred to themselves as

1 "we" in the second sentence. I am not able to conclusively
2 rule that out.

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1 RPTS KESTERSON

2 DCMN ROSEN

3 [10:41 a.m.]

4 Ms. Gaston. And I would like to ask a few questions
5 about a document that Exponent provided to the committee. I
6 would like to mark as Exhibit 8 the diagrams Bates marked
7 EXP02437 through EXP 02439.

8 [Sourì Exhibit No. 8
9 was marked for identification.]

10 BY MS. GASTON:

11 Q Dr. Sourì, have you seen these diagrams before?

12 A Yes, I have.

13 Q And it appears to be a set of diagrams charting how
14 many of Toyota's customer call center records reflect
15 potential instances of sudden unintended acceleration and
16 other sorts of events; is that correct?

17 A I believe that is correct. It is a summary of the
18 records that were received from Toyota that were analyzed for
19 keyword filtering for unintended acceleration.

20 Q And who created these diagrams?

21 A I couldn't tell you exactly, but probably someone
22 in our data analysis group.

23 Q But Exponent created these diagrams?

24 A I believe so, yes.

25 Q And I would like now to direct you to the third

1 diagram, which is Bates stamped EXP02438.

2 A Yes.

3 Q No. Actually -- sorry.

4 A 2439.

5 Q Sorry. Yes. EXP 02439.

6 A Yes.

7 Q So in this chart it appears that 1,008 call center
8 records are then divided into several categories. But if we
9 look to the -- sorry. One moment, please. Right. If we
10 look to the sort of third level of categorization --

11 A Yes.

12 Q -- they are divided into short duration unintended
13 acceleration events and long duration unintended acceleration
14 events. Is that --

15 BY MS. TINDALL:

16 Q And focusing on the event -- those events and the
17 753 ETCSI vehicles. So you have 753 vehicles that have
18 electronic throttle control systems and you viewed records
19 related to those and determined that 66 were short duration
20 unintended acceleration events and 336 were long duration
21 unintended acceleration events; is that accurate?

22 A If I got all the parts of the question, I think
23 that is a good reflection of it. It is taking the 753 unique
24 case records of vehicles that have ETCSI and studying the
25 records to categorize them and those records with no UA

1 complaints, records with long duration complaints and records
2 with short duration rate complaints.

3 BY MS. GASTON:

4 Q And who divided these events into these categories?

5 A So the way that these categories were established
6 were based on our analysis and our study of the databases.
7 So there were keyword searches that were performed to
8 understand to gather as much of the database as possible of
9 complaints that would have any relationship to unintended
10 acceleration. So out of the records, there are some that had
11 complaints that were not related to up unintended
12 acceleration at all. And I think we also produced to you the
13 set of keywords that we used to search for events that have
14 any influence at all on acceleration. So 321 are now
15 unrelated. So we are left with the remainder of which we
16 categorized them as short duration and long duration UA. And
17 the reason is that there is a distinct --

18 Ms. Tindall. That is fine. We understand the
19 distinction there.

20 Mr. Souri. Were you asking who -- like specifically --
21 this was a team exercise, of course, in terms of
22 understanding the data.

23 BY MS. GASTON:

24 Q So someone from Exponent divided these into these
25 categories?

1 A As a team decided to, yes.

2 BY MR. LEVISS:

3 Q Was any member of that team not part of Exponent?

4 A I don't believe so, no.

5 Q Did Exponent receive any input from any source
6 outside of Exponent in its sorting of these records?

7 A No, no, no. These are characterizations based on
8 technical descriptions of the reported events. So for
9 instance, short --

10 Q I'm not asking about the technical description, I'm
11 asking if Exponent received any input from outside of
12 Exponent.

13 A No.

14 Q Thank you.

15 BY MS. TINDALL:

16 Q Looking one step below the level we were just
17 discussing for -- let's take the long duration events. There
18 are 2 events categorized as ETC system. What does that mean?

19 A So what this is, is giving you the breakdown. So
20 out of the 366 long duration UA events that were reported,
21 the box underneath it gives you the breakdown of these 366
22 events. And depending on the description by the customer of
23 exactly kind of what happened, we categorize them as
24 subcategories in terms of the 103 involved accelerator pedal,
25 seven involved complaints with respect to cruise control in

1 one way or another, depending on the keyword searches that we
2 had; two involved the electronic throttle control system --

3 Q And now my question is, the two that involved the
4 electronic throttle control system, how did you end up
5 characterizing them that way?

6 A That was based on information in the actual
7 complaints. So the complaints -- I think we also produced
8 the records that we looked at. So there were descriptions in
9 the database as to what the possible systems or subsystems
10 that were involved according to the customers complaints.
11 Now --

12 Q What in a customer's complaint would lead you to
13 categorize it as complaining about something in the
14 electronic throttle control system?

15 A I think in the forms that they have to fill out and
16 this could be done at the dealership or some garage where
17 they fill out a complaint or at the call center, the
18 customers will be asked certain questions. I'm not exactly
19 certain of that particular process. I could get that
20 information for you, but it is based on customers' feedback
21 as to what was happening.

22 Q Did you interpret the customer's feedback in any
23 way or did the customer have to say my electronic throttle
24 control system was involved in this event. I would not have
25 known to say that if I had called Toyota. So I'm just

1 wondering --

2 A I don't believe that we had any -- we made any
3 interpretation of that data. I think it was as I understand
4 it, it was information that was based in the records that
5 were produced to us.

6 BY MS. GASTON:

7 Q So Toyota would have designated or written into the
8 description or done something to indicate that the ETC that
9 they believed to be --

10 A Or not necessarily Toyota. That could be a
11 possibility. But it also could be a possibility of a
12 customer going to a mechanic shop that is certified to
13 perform or, for example, these particular inspections and
14 they would check off some marks as to what they thought was
15 involved.

16 BY MS. CHRISTIAN:

17 Q Is it possible to pull the two cases that were
18 designated as the ETC system, do you have it flagged or
19 anything?

20 A It is certainly possible. I don't have them
21 flagged right now. But I can -- it should be all in the
22 production that we provided for you. I would be more than
23 happy to get you that information.

24 Q Yeah. I'm not sure I would pick it out on my own
25 out of 600 pages. That would give us a better understanding

1 of how it got separated out.

2 BY MS. GASTON:

3 Q Can you please tell us how Exponent first became
4 familiar with Professor David Gilbert?

5 A I can tell you in generalities just because I
6 wasn't involved in the initial stages of it. But from what I
7 understand is that Dr. Gilbert contacted Toyota first and
8 then we were contacted by Toyota to be informed about
9 Dr. Gilbert's work, and then we had a conference call between
10 the 3 parties as I understand it. So that is how we were
11 introduced.

12 BY MS. CHRISTIAN:

13 Q Were you on that call?

14 A On the initial call before the -- before his
15 report, no, I was not.

16 Q Do you know who was?

17 A I couldn't tell you exactly.

18 Q How did you find out there was a conference call?

19 A There was a discussion as part of the team that
20 there was a call.

21 BY MR. LEVISS:

22 Q At the time of the call?

23 A No, after the call.

24 Q When was the discussion?

25 A After the call when I got involved in evaluating

1 Dr. Gilbert's demonstration, I understood in the meetings
2 beforehand that Dr. Gilbert had introduced himself to Toyota
3 and that there was a conference call between Dr. Gilbert,
4 Exponent and Toyota?

5 Q Approximately when did that take place?

6 A In terms of how long before the hearing or before
7 the EVCT program, I cannot tell you exactly when. But it is
8 in that time frame.

9 BY MR. KOHL:

10 Q Before the hearing, before ABC? What timeframe?

11 A Yes, before -- before both. Before either there
12 was a conference call between Dr. Gilbert, Toyota and
13 Exponent.

14 Q And Toyota has also told us that until ABC aired
15 their segment, they did not know how to do the tests. So did
16 Dr. Gilbert refuse to tell you how to do the test on the
17 call?

18 A Dr. Gilbert gave us a description -- as I
19 understand it, he gave us a description of what he did, but
20 it was an incomplete description. He did not mention one
21 specific step that he had to perform at the end that would
22 have resulted in the SUA event that he demonstrated. So he
23 never told us about that and we only found that out while
24 watching exactly how he did it on the ABC interview.

25 BY MS. TINDALL:

1 Q Who told you about his failure to mention the final
2 step?

3 A No. We figured it out because he had never
4 mentioned it to us in the call before the ABC interview. And
5 when we saw what he did on the ABC interview and he had
6 obviously neglected to tell us about adding the 5 volts to
7 VPA2.

8 Q So who described to you what he reported in the
9 earlier conference call?

10 A It was -- exactly -- there were several people in
11 that meeting. There was a discussion.

12 BY MS. GASTON:

13 Q What meeting?

14 A In the meeting that we had to decide exactly what
15 tests to perform to recreate Dr. Gilbert's demonstration.
16 Who was at that meeting? It was again Matt Schwall, Subodh
17 Malady, Paul Taylor, myself.

18 BY MS. TINDALL:

19 Q Please name everyone that was at that meeting.

20 A Kevin Walters. Those are the ones that I remember.

21 Q And how long was that meeting?

22 A I cannot recall. We have these meetings very
23 regularly. So maybe it could have gone for an hour or 2.

24 BY MS. CHRISTIAN:

25 Q Was this in person or on the phone?

1 A On the phone for me. Yeah.

2 BY MR. LEVISS:

3 Q This is a meeting to discuss the conference call
4 that Exponent participated in with Dr. Gilbert and Toyota; is
5 that correct?

6 A This is a conference call to discuss how or what we
7 are going to do in terms of the analysis and the steps to
8 analyze Dr. Gilbert's demonstration and that involved
9 discussion -- discussing what Dr. Gilbert had done or had
10 communicated to us on the phone with Toyota and Exponent.

11 Q Just to clarify, this meeting that you're
12 describing or this conference call that you're describing
13 took place before or after the ABC News?

14 A Before the ABC -- yes.

15 Q Before the ABC News report?

16 A Correct, yes.

17 Q You had a discussion where some part of this from
18 Exponent described what professor Gilbert had --

19 A Had described himself, yes.

20 Q So what did you learn about Dr. Gilbert's
21 discussion with Exponent in this case?

22 A What we learned is that his description of the test
23 that he did, which is adding a 200 ohm resistor between VPA1
24 and VPA2. And I believe that was it. In terms of how he did
25 it, he took out the harness between the pedal and the

1 connector and that he cut the insulators, attached probes to
2 the conductors. He had a resistor box where he added the 200
3 ohms. That is what I recall was discussed.

4 BY MS. GASTON:

5 Q And did Exponent then attempt to perform
6 Dr. Gilbert's experiment as described?

7 A I believe so, yes.

8 Q And was Exponent able to get the same results as he
9 had gotten or as he had reported?

10 A Not until we saw the demonstration on ABC.

11 Q When Exponent attempted to repeat his experiment
12 and then did not get the results he had reported, did anyone
13 in Exponent attempt to contact him to figure out why there
14 was a disparity in results?

15 A Possibly. I wouldn't be able to tell you exactly.
16 It may have happened. But I wouldn't know.

17 BY MS. TINDALL:

18 Q Did Toyota -- it is our understanding that
19 Dr. Gilbert first contacted Toyota to describe what he had
20 done and then Toyota contacted Exponent and then the call was
21 set up. Between the time that Toyota contacted Exponent --
22 between the time that Toyota spoke with Exponent about
23 Dr. Gilbert's contact and the time that the conference call
24 took place, did Toyota provide Exponent with any information
25 about the call that he had had individually with Dr. Gilbert?

1 A Not to my knowledge.

2 BY MS. GASTON:

3 Q Did you take -- did you or anyone at Exponent take
4 notes during the conference call about Dr. Gilbert's call?

5 A Possibly. I didn't.

6 Q To your knowledge, did anyone from Exponent take
7 notes during the call with Dr. Gilbert in which he described
8 his experiment?

9 A Again, possibly. I wouldn't know. But I didn't.

10 BY MS. CASSADY:

11 Q Did anyone at any point instruct you not to take
12 notes?

13 A No.

14 BY MR. LEVISS:

15 Q Is it your practice not to take notes?

16 A That's a good question. It is my practice not to
17 take notes, yes.

18 Q Why is that?

19 A Because I just want to make sure that whatever I
20 write down is a complete analysis that is supported by facts
21 and that it is not something that is inaccurate or incomplete
22 or can be criticized for not having done particular things
23 that, of course I would do to protect my results in events.

24 Q And you think that taking notes would keep you from
25 accomplishing that?

1 A No. It is just I didn't take any notes. Notes may
2 have been taken.

3 Q I don't mean this particular meeting. In general,
4 you believe that taking notes in meetings and conferences
5 would keep you from accomplishing the goals that you just
6 stated; is that correct?

7 A I'm just -- it is just my practice. I mean, that's
8 how I work. And whenever I write something, I want to make
9 sure it is complete and that my opinions are supported by the
10 facts and that is just my practice.

11 Q Is that a widespread practice at Exponent?

12 A I wouldn't be able to speak to that. It is
13 certainly my practice.

14 Q When you're training people who work with you on
15 teams, do you ever discuss with them whether or not to take
16 notes?

17 A No, I do not.

18 Q Have you ever?

19 A Have I ever --

20 Q Given any staff at Exponent advice about whether or
21 not they should take notes?

22 A No, no, I have not.

23 BY MS. GASTON:

24 Q Were there other reports that Toyota received of
25 purported flaws that Toyota or Bowman & Brooke asked Exponent

1 to investigate?

2 A Not to my knowledge.

3 Q So there were no other calls like Dr. Gilbert's of
4 a test and result that Exponent tried to replicate?

5 A Again, not to my knowledge.

6 Q After the conference call with Dr. Gilbert -- well,
7 first of all, do you know if the person from Exponent who
8 joined the conference call was professor Gilbert identified
9 him or herself?

10 A If the person who joined the --

11 Q Who joined the conference call with Dr. Gilbert
12 introduced him or herself to Dr. Gilbert over the phone?

13 A Having not participated myself on that call, I
14 wouldn't be able to tell you.

15 Q After that conference call, when was the next time
16 that Exponent had contact with Professor Gilbert?

17 A To my knowledge -- I mean, there may have been
18 other times -- but to my knowledge, after that we -- I
19 believe it was in March sometime when we went and visited
20 Dr. Gilbert at the Southern University of Illinois
21 Carbondale. I can't recall the exact date. But one of our
22 staff went out there to discuss our findings or to at least
23 give them a copy of our report and to share with them other
24 finding.

25 Q Who was it from Exponent who went to SIU?

1 A I believe it was Dr. Kevin Walters. And then after
2 that, we -- I think we had extended to Dr. -- I don't
3 remember how it was done, but it is certainly during that
4 March meeting with Dr. Gilbert, Exponent extended to him an
5 invitation to visit our facility.

6 Q Do you know how Kevin Walters was chosen as the
7 person to go to SIU on behalf of Exponent?

8 A No, I do not.

9 BY MS. TINDALL:

10 Q What is Dr. Walter's area of expertise?

11 A Dr. Walters, I believe, is in the vehicle
12 engineering practice and I can't remember his title.

13 Q And has he been working on the projects related to
14 Toyota?

15 A Yes.

16 BY MS. GASTON:

17 Q Toyota has informed us that the meeting at SIU was
18 on March 2nd. Does that sound accurate to you?

19 A That sounds about right.

20 Q And it is our understanding that one of Toyota's
21 associates at SIU, Neal Schwartz, resigned from SIU's board
22 on February 28th and another, Terry Martin, resigned on March
23 1st. Are you aware of these resignations?

24 A No, I'm not. I am not familiar with the names.

25 BY MR. LEVISS:

1 Q You didn't know that two individuals associated
2 with Toyota had resigned from the board? Is that what you
3 are saying?

4 A Not to my knowledge, yeah. No. I don't know that.
5 From the board of --

6 BY MS. GASTON:

7 Q Southern Illinois University.

8 A No, I didn't know that. You're jogging my memory,
9 but there may have been a news report about it, but I didn't
10 really look into it.

11 Q Do you know if anyone from Exponent has discussed
12 those resignations with Toyota?

13 A Not to my knowledge.

14 Q What was the purpose of Exponent's visit to SIU?

15 A Again as I mentioned, the purpose was to share with
16 Dr. Gilbert our findings.

17 BY MS. TINDALL:

18 Q Do you know if Exponent met with anyone other than
19 Dr. Gilbert?

20 A At the same time or --

21 Q I mean, if you were there to share your findings
22 with Dr. Gilbert --

23 A No, I understand that that meeting also had Jack
24 Greer, who I believe is the chair of the department that
25 Dr. Gilbert is in, at SUI was there, and I believe there was

1 another person there. This was as it was reported to me
2 afterwards. So I wasn't there myself.

3 Q So would it be accurate to say that the purpose of
4 the meeting was to share Exponent's results with the
5 university rather than just Dr. Gilbert?

6 A I don't know if that would be a fair way to
7 characterize it. I mean, certainly the intent was to share
8 it with Dr. Gilbert, but I understand there may have been
9 some protocols to meet with the department at first. That I
10 wouldn't be able to address.

11 BY MS. CHRISTIAN:

12 Q Do you know how long the meeting was?

13 A No, I do not. But probably within a span of a day
14 I understand.

15 Q Did you go to his lab or did you -- do you know if
16 they were just sitting at the table going over the report or
17 did you go to the automotive lab at SIU?

18 A I do not know that.

19 BY MS. GASTON:

20 Q Do you know if anyone stated or suggested that
21 Professor Gilbert's experiment had harmed the school's
22 relationship with Toyota?

23 A I wouldn't be able to address that.

24 Q And then it is our understanding that Exponent
25 invited Professor Gilbert to Menlo Park to visit the facility

1 where Exponent was testing Toyotas and other cars; is that
2 true?

3 A Yes, correct.

4 Q When did Exponent invite professor Gilbert?

5 A I think the -- I can't remember exactly when the
6 invitation was extended. I think there were several times
7 when we extended it. But it was definitely extended to him
8 during Exponent's visit to SUI when Exponent met with him at
9 SUI.

10 Q Do you know if the invitation was extended directly
11 to him or to officials at SIU or someone else to get to him?

12 A It is SUI, right? Yeah, Southern University of
13 Illinois. Southern Illinois University. Thank you. Extend
14 it to anybody else? Well, I can tell you that when
15 Dr. Gilbert did come to visit us at Menlo Park, he was
16 accompanied with Dr. Greer. So I imagine we must have also
17 out of courtesy extended that invitation to the head of the
18 department.

19 Q Sure. Sorry. What I'm asking is was it professor
20 Gilbert personally who was asked to come or was the
21 invitation given to him through someone else? Do you know?

22 A Like I said, there may have been invitations
23 extended to him several times, but I understand that after
24 the -- SIU was extended to him personally by Exponent.

25 BY MR. LEVISS:

1 Q Is there anyone else at Exponent that has more
2 knowledge than you about Exponent's dealings with
3 Dr. Gilbert?

4 A I don't believe so. I mean, I'm intimately
5 familiar with Dr. Gilbert's demonstration. I know exactly
6 what he did. He knows exactly what we did. And I'm able to
7 address all questions that you have with respect to his
8 demonstration.

9 Q How do you know what Dr. Gilbert knows?

10 A He wrote it in his report.

11 Q Have you ever talked with him personally?

12 A I have not talked with him personally.

13 BY MS. GASTON:

14 Q Do you think that perhaps the person who was on the
15 initial conference call with him or the person that met with
16 him at SIU might be able to tell us things that you're not
17 about Exponent's contact with him?

18 A I wouldn't be able to tell you that. I mean,
19 possibly. But what kind of information are you interested
20 in.

21 Q We have asked several questions that you say you
22 don't have personal knowledge of because you weren't a party
23 to these conversations. So I'm asking if the people who were
24 party to these conversations would be able to tell us more?

25 A Possibly.

1 Q Okay.

2 BY MS. CHRISTIAN:

3 Q Were you present when he visited Exponent in
4 mid-March?

5 A In Menlo Park?

6 Q Yes.

7 A No, I was not.

8 BY MR. LEVISS:

9 Q Is there a reason you weren't?

10 A Yes, I believe I was involved in a deposition on
11 another matter at that time. I was certainly supposed to be
12 there.

13 BY MR. KOHL:

14 Q Did you have any interaction with Professor
15 Gilbert, e-mail, phone call, nothing? You never spoke to the
16 man in your entire life?

17 A No.

18 Q Okay. Thanks.

19 BY MS. GASTON:

20 Q What did Exponent expect to gain from Professor
21 Gilbert's visit?

22 A Well, the reason that we wanted to -- the reason
23 that we extended the invitation is, one, to share with him
24 exactly what we did to see if he had any questions, if he had
25 any concerns about what we did and how we did it. We also

1 wanted to give him an opportunity to test the vehicles
2 himself. But with Toyota and non-Toyota vehicles.

3 BY MS. TINDALL:

4 Q You wanted to give Dr. Gilbert a chance to test the
5 vehicles at Exponent?

6 A At Exponent. Yes, absolutely. Which he did. He
7 visited us and he saw the vehicles. He saw the same circuit
8 that he had engineered and that he had applied to the
9 vehicle. We showed him what we had done for all of the
10 vehicles, so in the Camry, for example, there was no
11 additional resistor. In other vehicles there were and he saw
12 that. He conducted --

13 Q Did Exponent tell Dr. Gilbert in advance what
14 vehicles it was testing so that he could prepare to -- we
15 discussed earlier that the difference steps may be necessary
16 on different vehicles.

17 A Yes.

18 Q So did you tell Dr. Gilbert ahead of time which
19 vehicles he would be invited to test?

20 A Yes. It is all in our report. All the different
21 vehicles are in our report which was publicly available. So
22 he knew exactly which vehicles we were going to test.

23 BY MS. GASTON:

24 Q Did you ask Professor Gilbert what vehicles he had
25 available to him in his lab?

1 A Did we -- yes, I believe we asked him if he was
2 willing to perform tests, the same tests that he conducted on
3 other non-Toyota vehicles that he had in his facility.

4 Q That is a different question actually. Did you
5 ask, or did Exponent ask Professor Gilbert for a list of the
6 vehicles available to him in his own lab?

7 A I don't -- that I don't believe we did.

8 BY MS. CHRISTIAN:

9 Q Who was present for Exponent when Dr. Gilbert
10 visited?

11 A When Dr. Gilbert visited, there was Matt Schwall,
12 Kevin Walters?

13 BY MR. KOHL:

14 Q Who was the first one?

15 A Matt Schwall. Kevin Walters. It would be Paul
16 Taylor, John Loud.

17 Q Was Subodh there?

18 A May or may not have been. I don't know.

19 Q How about for Toyota, did they show up for that
20 meeting?

21 A I'm not sure.

22 Q How about Bowman & Brooke?

23 A I don't know.

24 BY MR. LEVISS:

25 Q The meeting was at?

1 A At Menlo Park, correct.

2 Q Do you keep records of non-Exponent personnel who
3 visit?

4 A We do have a visitors log, yes.

5 Q If we wanted a list that attended that meeting,
6 that is information you could provide us?

7 A I would check with Exponent, but we do have a list
8 of visitors coming to Exponent.

9 Q Is there any reason you couldn't provide that?

10 A We could just ask somebody who was there to give us
11 a list.

12 BY MS. CHRISTIAN:

13 Q Did you guys have any meetings before this visit to
14 prepare that you participated in?

15 A Yes. I mean, we prepared to know exactly -- to
16 have everything ready for Dr. Gilbert. We knew that he was
17 going to be visiting for a very short time based on his
18 schedule. So we had everything prepared for him and so, yes,
19 there were discussions exactly where to have the vehicles,
20 how to set them up, have everything --

21 BY MS. TINDALL:

22 Q So everything was prepared for him. In what way
23 was he going to be able to run his experiment?

24 A Oh, yeah. No. We had everything exposed for him.
25 So as a matter of fact, he conducted his own experiment where

1 he manipulated and changed the value of the resistances
2 between the VPA wires themselves. So we actually came to an
3 understanding of the sensitivity of his circuit in terms of
4 what values of resistors he could apply between the pedal
5 sensor wires. So he understood exactly what was done, how --
6 it was his circuit.

7 Q According to the people who described the meeting
8 to you. You have never actually spoken to Dr. Gilbert about
9 what he understood, is that --

10 A I haven't spoken to Dr. Gilbert. But according to
11 my understanding, he was able to understand the sensitivity
12 of the circuits that he had developed, that he had engineered
13 on the vehicles at Exponent.

14 BY MS. CHRISTIAN:

15 Q Was he able to actually, like, touch the resistors?

16 A Absolutely.

17 Q And he did?

18 A Yes, he did.

19 BY MS. GASTON:

20 Q You have heard that from others at Exponent,
21 because you did not see that?

22 A I didn't see it myself, but it was reported to me.

23 BY MR. KOHL:

24 Q Who is Exponent's direct contact to Professor
25 Gilbert? If Professor Gilbert calls Exponent, who does he

1 call?

2 A So he has, I understand, several contacts at
3 Exponent. He can call and John Loud has communicated with
4 him directly. John Loud has also communicated with Jack
5 Greer directly. Paul Taylor has communicated with him
6 directly. Kevin Walters. So he has direct access to at
7 least those people at Exponent.

8 Q Why would Exponent send you here if you're one of
9 the only people on this list that has never spoken to
10 Gilbert?

11 A You know, again, my understanding is that you were
12 interested in our analysis of Dr. Gilbert's --

13 Q The Gilbert analysis is one of the only two public
14 statements or public analysis you have made on sudden
15 unintended acceleration. So it must be quite important to
16 Toyota that you dispute Professor Gilbert. We understand
17 that.

18 A I understand that -- yeah, what Dr. Gilbert
19 concluded based on the work that he performed, I think, was
20 not supported by his data, by his results. And I think that
21 as -- when a conclusion or an opinion like that is made, that
22 specifically targets a product that is obviously very
23 important for drivers in this country and elsewhere, I think
24 that that is an important responsibility to take on and to
25 see if his work can be peer reviewed and what the result of

1 that peer review would be.

2 Q So my question is, why would Exponent think you
3 were the best person for us to talk to for this
4 investigation?

5 A Because --

6 Q Responding to the majority's --

7 A Because I'm the one who is most familiar with what
8 he did. I understand --

9 Q So you're most familiar but you never spoke to him.
10 That just doesn't -- it is hard to comprehend that.

11 A I see. No. I'm talking about the actual
12 experiments, the actual work that he did that he described in
13 his report. I'm most familiar with what we did at Exponent
14 in replicating Dr. Gilbert's work. I have the most
15 familiarity with respect to the volts that he employed or
16 identified in terms of their possibilities of occurrence in
17 nature in the real world.

18 Q So you have personally never wanted to speak to him
19 or has Exponent restricted you from that?

20 A No, Exponent has not restricted me. I just haven't
21 had the opportunity. Certainly I have no problems whatsoever
22 talking to Dr. Gilbert.

23 BY MS. GASTON:

24 Q What specific conclusions from Dr. Gilbert's report
25 were not supported by the data?

1 A Dr. Gilbert in his testimony, I understand, opined
2 or offered a conclusion.

3 Q I'm sorry. You say you understand. Did you read
4 it?

5 A I did read it. Yes, I did read it, that there was
6 an alarming hazard with respect to the Toyota reported
7 incidents. Or rather, with respect to his -- the event that
8 he demonstrated on Toyota that to him represented an alarming
9 hazard that was specific to Toyota and only Toyota and that
10 in his opinion, it indicated to a design flaw that was also
11 specific to Toyota. And the reason that the data does not
12 support his conclusions is because to come to that
13 conclusion, you would have to actually perform experiments on
14 non-Toyota vehicles to be able to isolate them. So you have
15 to have a control sample. What he did is one of the basic --
16 what he didn't do was one of the basic tenets of science is
17 perform a controlled experiment.

18 BY MS. TINDALL:

19 Q Have you ever talked to him about whether he has
20 tested other vehicles other than Toyota's?

21 A We have talked to him. Yes. Yes. We have.

22 Q You haven't?

23 A I haven't personally as I said talked to him, but
24 we did ask him why it was that he didn't test non-Toyota
25 vehicles.

1 Q Did you -- so he reported to you that he had not
2 tested non-Toyota vehicles?

3 A The same -- my understanding is that he didn't
4 perform the same tests that he did on Toyota vehicles on
5 non-Toyota vehicles.

6 Q But he performed -- did he perform any tests on
7 non-Toyota vehicles?

8 A I don't know if he did or didn't. But my
9 understanding is based on his demonstration, based on his
10 representation of his demonstration, that he hadn't done
11 those tests on non-Toyota vehicles.

12 Q I guess what I'm asking is, it sounded like you
13 were saying he hadn't performed the exact same test on
14 non-Toyota vehicles. When we discussed Exponent's work on
15 non-Toyota vehicles earlier, you described needing to apply
16 an additional resistor to make his experiment work. I'm
17 asking, is that the sort of distinction you're trying to make
18 or did he report to you that he had never attempted to induce
19 sudden unintended acceleration without setting a diagnostic
20 trouble code on other manufacturer's vehicles?

21 A My understanding is that he had never tried to do
22 the study on unintended acceleration on non-Toyota vehicles.
23 And when asked specifically if he was going to perform that
24 in the future, I think his response was is that he -- I can't
25 remember exactly how he characterized it, but --

1 Q Well, you weren't there.

2 A This is my understanding of his characterization,
3 which is that he didn't have the funding or he wasn't
4 interested. I can't remember exactly.

5 BY MR. LEVISS:

6 Q What is the basis for your understanding?

7 A Based on communications that I have had with the
8 team.

9 Q Who on the team?

10 A John Loud and Kevin Walters who discussed this with
11 Dr. Gilbert.

12 Q So both of those people reported to you that was
13 Dr. Gilbert's words?

14 A Yes.

15 BY MS. CHRISTIAN:

16 Q You said earlier that he had a better understanding
17 of the sensitivity of his circuit board after visiting
18 Exponent.

19 A Yes.

20 Q At any time during his visit -- and I grant it that
21 you weren't there -- did he object to what he saw? Did he
22 indicate that that wasn't an accurate replication of his
23 work?

24 A Not at all. He never raised any concerns or any
25 objections. I think he -- I think he asked questions about

1 the details it of and we provided him with the answers.

2 BY MS. GASTON:

3 Q So you answered every question that he asked?

4 A Absolutely. We answered every question that he
5 had. He never raised any objections, he never raised any
6 concerns during his visit.

7 BY MS. CHRISTIAN:

8 Q Let me ask one question. On Sean King's Web site,
9 he states that Gilbert "watched a demonstration but was
10 unable to assess exactly what Exponent had done because the
11 vehicles were festooned with extra wiring." Do you know what
12 could have formed the basis of that statement?

13 A We have no idea. Not only were we there personally
14 for him at his disposal, offering him all of our resources
15 available to answer all of his questions, but John Loud
16 communicated with both Jack Greer and attempted to
17 communicate with Gilbert but never got to Professor Gilbert.
18 Several times after the visit and before the response that he
19 produced recently. And the purpose of those communications
20 were to follow up, was to say, look, are there any questions
21 is there anything else that you need, is there anything that
22 we need to clarify for you. And he never got back to us --

23 Q How did he attempt to reach for him? Do you know?

24 A How did we attempt --

25 Q How did Loud reach out to him?

1 A By phone call and e-mails.

2 Q Can we have the e-mails?

3 A Certainly.

4 Q What was -- do you know what the extra wiring King
5 refers to on this Web site is?

6 A We really -- we don't know. None of this was
7 raised during his visit. None of it was raised during --

8 BY MS. TINDALL:

9 Q As far as you know?

10 A In our attempts to communicate with him. And as it
11 was communicated to me. And the entire -- his entire
12 response is based on two issues. I think the first issue is
13 that --

14 Q Excuse me. Whose entire response?

15 A Dr. Gilbert's response. On two issues if I
16 remember, one of them was that it wasn't exactly what he had
17 done, which, again, I don't understand how he could have come
18 to that conclusion given that in the Camry case there was no
19 resistor at all, if that is what he was referring to. We
20 don't really know.

21 BY MS. CHRISTIAN:

22 Q Is there an extra wire to add extra resistance?
23 You talked about bearing the 200 ohms. Does that take an
24 extra wire to do that?

25 A Maybe he was referring to that, yes.

1 Q So it does take an extra wire?

2 A You can attach the wire -- I mean, it doesn't take
3 an extra wire. It just takes an extra component that you add
4 in.

5 BY MS. TINDALL:

6 Q Does that necessitate then an extra wire?

7 A , It could necessitate an extra wire, yes.

8 BY MS. CHRISTIAN:

9 Q Did you guys use an extra wire to --

10 A Yes, yes. Because we had to add a resister in
11 there.

12 Q I didn't know if you just pressed a button and
13 added one.

14 A No, you have to have a resister to --

15 Q You have to add the other wire. Okay.

16 A So that may -- we don't know. This is purely
17 speculative. But he never asked, he never raised any
18 objections. He seemed to be extremely content with the
19 testing as he performed it as it was reported to me. And the
20 other issue that he raises in his response is the fact that
21 according to him, we used non-factory circuitry. And again,
22 I have no idea what it is that he is talking about because to
23 add components, wires and resisters, just as he had done in
24 his own demands necessarily requires adding non-factory
25 components. So again --

1 BY MS. TINDALL:

2 Q Did you add any non-factory components that
3 Dr. Gilbert had not, additional non-factory components?

4 A Additional non -- he did not refer in his response
5 to additional non-factory --

6 Q That's not my question.

7 A I will answer your question in some cases, yes, in
8 some cases, no. So I cannot take his response to be
9 indicative of -- I mean, it would be speculation as to
10 exactly what it is.

11 Q I'm not asking you what his response was. I'm
12 saying his response was there was there was additional
13 non-factory --

14 A No, no.

15 Q His response was there is non-factory circuitry?

16 A Yes.

17 Q And then my question is: The vehicles other than
18 the 2007 Camry, was there -- in Exponent's demonstration of
19 the Gilbert experiment when Dr. Gilbert was at Menlo Park,
20 was there non-factory circuitry on those vehicles that was
21 not present in Dr. Gilbert's experiment?

22 BY MR. COHEN:

23 Q Or any other components in addition to the
24 circuitry.

25 A So there were -- in addition to the non-factory

1 components that were already there in Dr. Gilbert's
2 demonstration, there were additional non-factory components.

3 BY MS. TINDALL:

4 Q What were those?

5 A Just the resistor. Just like the resistor that he
6 uses between the VPA1 one and VPA2. He used 200 ohms in some
7 other vehicles.

8 Q There is yet another resistor added?

9 A There is another resistor. Not in that location,
10 in a different location between the 5 volts and the VPA --

11 BY MS. CHRISTIAN:

12 Q And this would be for the Avalon because to your
13 knowledge he didn't --

14 A Yes, yes.

15 BY MS. TINDALL:

16 Q And would that be correct?

17 A Well, yes. Correct.

18 Q Going back to the discussion we had earlier about
19 the steps involving Dr. Gilbert's test, would the additional
20 resistor constitute a seventh step?

21 A Yes, it would.

22 BY MS. GASTON:

23 Q Who at Exponent has reached out to ask Dr. Gilbert
24 what he means by his response to his visit?

25 A Mr. John Loud actually that e-mail was sent to -- I

1 would have to look again.

2 Q But you were a party to that e-mail?

3 A I was not party to that e-mail.

4 Q But you have seen the e-mail?

5 A Yes.

6 Q Okay. Is there any individual project in
7 Exponent's work on sudden unintended acceleration for Toyota
8 on which you have spent more time than on the Gilbert report?

9 A I'm sorry. Can I have the question --

10 Q Was there a single project in your work for Toyota
11 that you have spent more time on than on the Gilbert report?

12 A Absolutely, yeah. The Gilbert was a small portion
13 of our work.

14 BY MS. CHRISTIAN:

15 Q When you -- we are all familiar with law firms. We
16 have matter codes, like if you have one case, you bill out to
17 individual matters. Do you guys separate your billing that
18 way? Like, Toyota matter one, Gilbert Matter 2, EMI -- do
19 you separate it or how do you guys do that?

20 A We typically have a project number that encompasses
21 all of our work on that project. In terms of dividing up
22 into tasks, I don't know exactly.

23 Q Do you divide it up into tasks?

24 A No, I do not.

25 BY MS. TINDALL:

1 Q So the project number would refer to work for
2 Toyota or would a project number refer to work on the Gilbert
3 demonstration?

4 A No, I believe for Toyota.

5 BY MR. LEVISS:

6 Q What is an example of a project on which you spend
7 more time an responding to Dr. Gilbert?

8 A Oh, I mean. Again like I said, Dr. Gilbert's was a
9 small portion. For me looking -- studying the software and
10 the firmware and the assembly code that Toyota has that
11 controls the ECM. So we are looking at software that takes
12 the signal from the --

13 Q I understand the software is complicated. How much
14 time have you spent looking at the software, you personally?

15 A Personally? Many, many weeks.

16 Q So how many -- exclusively looking at the software
17 over many, many weeks?

18 A Software, hardware.

19 Q I mean, your work over many, many weeks for
20 Exponent --

21 A Yes.

22 Q -- was limited to just looking at Toyota's
23 software, were you working on other projects?

24 A I wouldn't characterize it as limited to looking at
25 the software. Certainly the software is a very complex and

1 sophisticated part of it that takes up a lot of my time. But
2 there are other aspects of that system that I am looking at
3 as well.

4 Q So approximately how many hours have you spent
5 looking at Toyota's software for this project?

6 A I couldn't tell you. But if you take -- I think I
7 gave you an estimate yesterday of how many hours I typically
8 spend on it. But I mean, the bulk of it I would say a good
9 chunk of it is the software. And then another good chunk of
10 it is the hardware.

11 Q You said that there were some weeks where you might
12 spend 3 to 5 hours and other weeks where you might spend 60
13 to 80.

14 A Correct, yes.

15 Q So you can't do any better than that in estimating
16 for me how many hours you have spent looking at Toyota's
17 software?

18 A I mean, I -- the software is a very complex part of
19 it that involves -- I mean, we have done -- I personally --

20 Q I'm not asking for an explanation of how
21 complicated it is. I just want to get a sense of whether you
22 spent 5 hours looking at the software or --

23 A No. I mean, I would say -- like I said, I would
24 characterize my analysis on the software as having taken a
25 good -- equivalent of a good 7 to 8 weeks worth of work.

1 Q So 7 to 8 weeks of 8 hour days working exclusively
2 on the software?

3 A Yes, yes.

4 BY MS. GASTON:

5 Q Just to follow on the law firm analogy. So you
6 used the overall Toyota code for every hour that you do work
7 on Toyota matters? Do you bill by the --

8 A Yes, yes.

9 Q Do you fill out billing sheets by the hour?

10 A Yes, yes.

11 Q Do you describe at all in detail what you have done
12 in that hour on Toyota? Would you for instance describe --
13 write software?

14 A Yes, that would be on the billing records.

15 Q Would you describe the work that Exponent had done
16 up to the date of the webinar as a comprehensive review of
17 Toyota electronics?

18 A A comprehensive review of Toyota electronics. I
19 wouldn't characterize it that way. I would say that up to
20 the webinar it was a comprehensive review of Dr. Gilbert's
21 demonstration. The electronics is a very sophisticated
22 system with many subsystems and interacting software,
23 firmware and so on. So that work and that analysis is
24 ongoing.

25 Q Do you believe that as of today Exponent has

1 conducted a comprehensive review of Toyota's electronics?

2 A No. Again, I would say that our analysis
3 continues. This is not a simple project.

4 Q And do you believe that additional work is
5 necessary to determine that Toyota's failsafe systems work in
6 all circumstances?

7 A In all circumstances? I mean, I think that the
8 answer is that we are looking at all reasonably possible
9 scenarios that could result in an SUA. So we continue to
10 explore those. I wouldn't say that we are at a stage where
11 we have completed that analysis yet.

12 BY MR. LEVISS:

13 Q Molly asked you a pretty straight forward question.
14 It was, can you conclude today based on your work that
15 Toyota's failsafe mechanisms work in all circumstances?

16 A Up to today, our findings to date are that we have
17 not found any potential root causes that would result in
18 SUAs. So the answer is given that we are here today and that
19 our work is ongoing, yes. The failsafes do work based on
20 what we have done to date.

21 BY MS. TINDALL:

22 Q Could you say with confidence today that Toyota's
23 failsafe systems work in all circumstances?

24 A No. That is why I was very careful. I wouldn't
25 say in all circumstances. We are still continuing.

1 Q In the circumstances that you have tested, you have
2 confirmed they work. But taking the broad statement, are you
3 confident today, are you confident enough to say today that
4 Toyota's failsafe systems work in all circumstances?

5 A As a scientist, I cannot do that.

6 BY MS. GASTON:

7 Q Will you ever be able to make that statement with
8 certainty?

9 A I don't -- it due process on the results.

10 Ms. Tindall. That is fine.

11 BY MS. GASTON:

12 Q In the time that you have worked for Exponent, can
13 you estimate how many litigation support projects you have
14 been involved in?

15 A Litigation support projects. So I have been there
16 for 8 years and I would say you can count them probably on
17 one hand -- on two hands, maybe a third is required. So we
18 are talking --

19 Q 10 to 15?

20 A Something in that range. And I believe that there
21 is a list of testimony that I have provided. So it would all
22 be there.

23 Q Okay. And can you provide an example of an
24 instance in which Exponent has reached a conclusion contrary
25 to the interests of the company that hired it for litigation

1 support?

2 A I do that very frequently. For instance, I'm going
3 to have to talk in generalities just because of protective
4 orders. But I can give you an example. I'm currently
5 working on a patent infringement matter that involves
6 electronics and attorneys have asked me to perform an
7 infringement analysis on the claims of the patent. And there
8 were instances where I just went back to the attorneys and I
9 said there is no way that you -- there would be no scientific
10 support for an opinion that a particular product infringes a
11 particular claim. So it depends on the analysis is my point.

12 Q Have your conclusions ever, to that effect, ever
13 been made public? Have you ever made a conclusion contrary
14 to the interests of a client in a litigation support case
15 that have been made public?

16 A When you say public -- usually our reports are to
17 our clients. We don't normally make those reports public.
18 So I wouldn't be able to tell you if any of those are public.

19 Q Do you have the right or ability to make your
20 reports public or are you under obligation to give them to
21 your client and let your client do what the client wants with
22 them?

23 A It depends on the situation. It depends on whether
24 or not there are confidentiality agreements where we have
25 to -- where we are required to give our reports to our

1 clients or in special cases such as this where we have made
2 the statement and Toyota has made the statement our findings
3 and reports and conclusions would be made public.

4 Q Do you have a confidentiality agreement with
5 Toyota?

6 A We have an agreement that -- a confidentiality
7 agreement that allows us to look at the source code and the
8 design documents that belong to Toyota. So I understand that
9 I have seen that agreement to allow us to review material
10 that is confidential to Toyota. But I'm unaware -- and I
11 don't think there is any such document with respect to
12 reports, explaining reports.

13 BY MS. TINDALL:

14 Q Do you have any agreement with Bowman & Brooke or
15 Toyota about what statements you can make public about your
16 findings?

17 A Not to my understanding, no. The only document is
18 that retention letter to my understanding that we have.

19 BY MS. GASTON:

20 Q Is there a tacit understanding with Bowman & Brooke
21 that statements will be sent to Bowman & Brooke for review?

22 A I don't believe so. Our findings will be our
23 findings and we will release them ones we are complete with
24 the analysis.

25 BY MS. CHRISTIAN:

1 Q You guys have given us tons of charts and printouts
2 and electronic testing data. Who owns that? Is that yours?
3 Is that Toyota's?

4 A That is a good question. I don't know. We have
5 released them to you. So --

6 Q When projects are done, do you guys typically keep
7 that stuff, destroy it? What will happen when Toyota wraps
8 up with all of that stuff?

9 A Normally I think -- in my experience at least since
10 a lot of the materials that I typically review in my projects
11 are confidential materials, if I'm asked to return the
12 material, I will return. If I'm asked to get rid of it, I
13 will get rid of it. If not, I may keep it.

14 Q And this is a hypothetical, but when you guys draft
15 reports, for example, the Gilbert report, you talked about
16 your internal process of review, you have a technical review,
17 you have a peer review. What is the process for edits from
18 your client. If they propose an edit you don't agree with,
19 do they win?

20 A No, if -- you know, it is not usual that maybe
21 clients may have an input in terms of the structure of report
22 or certain things that could be said better or certain things
23 about whether or not we are going to do something in the
24 future. Those are valid. But as long as they don't affect
25 our opinions, as long our opinions are supported by the data,

1 nobody gets to do anything with our opinions. We own the
2 opinions. They are Exponent's opinions and we want to make
3 sure that these opinions and conclusions and findings are
4 supported by our analysis, by our test results. That is
5 sacrosanct for us.

6 Q In either the Gilbert or the one that was produced
7 in February, do you know if Toyota made any edits to your
8 opinions or conclusions stated --

9 A Absolutely no. We would not let anybody make any
10 changes to our conclusions or opinions.

11 Q So they did not suggest any?

12 A Certainly not to my understanding, no.

13 BY MR. COHEN:

14 Q I just want to back up. Molly asked a question if
15 you can provide an example of an instance in which Exponent
16 reached a conclusion contrary to the interests of the company
17 that had hired you. And your answer was we provide
18 information to companies and I don't know what is made
19 public, to summarize it. Are you aware of any instances in
20 which Exponent reached a conclusion contrary to the interest
21 of the company that hired it for litigation support and that
22 conclusion was made public?

23 A And that conclusion -- so I would have answered yes
24 before the and. But with the and, I don't know.

25 Q So you can confirm that you have -- so it sounds

1 like you're aware of instances in which you have reached
2 conclusions contrary to the interest of the client that hired
3 you?

4 A Absolutely, yes.

5 Q And you're aware of instances in which these
6 conclusions were not made public?

7 A Yes. Well, actually -- you know, what --

8 Q You're not aware of any instance in which those
9 were made public?

10 A So let me -- I think maybe an example would
11 illustrate and answer the affirmative to your question that,
12 yes, I'm aware of some. For instance I have been retained on
13 a patent infringement case and originally the attorneys write
14 an infringement contention that include, you know, your
15 products infringed this, this, and this claim. I get
16 retained for example and I perform the analysis and I go to
17 the attorneys and I say, some of what you are saying is
18 supported by the data, but some of the rest of it is not.
19 And you just cannot say it. So they will revise the
20 infringement contentions or in my expert report in my
21 testimony or depositions I would say, well, that product
22 would not infringe on that claim for instance. So I think
23 that would be public, except that most of the depositions and
24 expert reports are usually sealed.

25 Q If you were asked on that particular case, you

1 would say that?

2 A Infringement would be taken out of the case. So
3 obviously the analysis doesn't support it. So there would be
4 no infringement on that claim.

5 Q So you are --

6 A And I would --

7 Q Is there a case that you are aware of where you
8 provided this information to a client that --

9 A Absolutely. Real, real case, yeah.

10 Q Let me get back to my original question. So again,
11 the question of -- Exponent has reached conclusions contrary
12 to the interest of companies that have hired it, yes?

13 A Yes.

14 Q Yes. Okay. There are instances where you have
15 reached those conclusions where those conclusions have not
16 been made public?

17 A Yes.

18 Q Okay. That is fine. Thank you.

19 BY MS. CHRISTIAN:

20 Q Has that happened to date with Toyota?

21 A No, not to my knowledge.

22 BY MS. GASTON:

23 Q Have you not reached conclusions contrary to
24 Toyota's interests yet?

25 A We are still in the process of analyzing. And our

1 conclusions to date is that we have not yet identified any
2 set of conditions or potential root causes that would result
3 in an SUA.

4 BY MR. KOHL:

5 Q This comes back to something you talked about
6 yesterday. And Toyota has publicly and to the committee kind
7 of made a big deal of this blank check they have given you.
8 Who decides when that check stops being written? Exponent
9 or --

10 A Well --

11 Q Or Toyota or Bowman & Brooke.

12 A As far as we are concerned, we are continuing with
13 our analysis until either we identify a set of conditions
14 that could result in SUAs. Or we will just continue along
15 every reasonably possible path that we can identify or that
16 others can identify. I mean, we have -- we understand that
17 others are working on this too, such as NSA and NHTSA.

18 Q They all have time frames, though. That's what
19 I'm just trying to --

20 A What I want to say is also that we are -- we are
21 completely open to receiving suggestions from others. And we
22 have received suggestions from outside of Exponent.
23 Professors or other engineers would say have you considered
24 this or have you considered that. We are completely open to
25 these suggestions. And if you have any suggestions, I'm more

1 than happy to take your suggestions and take them back and
2 perform that --

3 Q I'm just trying to wonder is there a discussion of
4 when this ends?

5 A My understanding is until we find something or
6 until we have exhausted all possible paths.

7 BY MS. CHRISTIAN:

8 Q Based on the work being done today, do you see a
9 timeframe. You said you don't -- I'm not sure what the work
10 span is. But if you know kind of generally what work is
11 being done, what is a reasonable timeframe for that work to
12 be completed based on that?

13 A It is really, really hard to say. Because, I
14 mean -- if we find it today or tomorrow or if we find a set
15 of conditions that could result in SUA, we would be done.
16 But --

17 BY MR. KOHL:

18 Q That doesn't make any sense because just by
19 these -- there is all different areas that these complaints
20 come from. So even if you found one that dealt with the
21 cruise control --

22 A I didn't say one. I said a set of conditions. We
23 would certainly pursue whatever we identified as potential
24 areas.

25 Q But if you find a problem with cruise control --

1 A Yes, we will --

2 Q Stop?

3 A No. I said we will exhaust all possible paths.
4 Okay? But if we find a set of conditions that will result in
5 SUA -- I'm not saying either cruise control or --

6 Q You're just saying a set of conditions. I
7 understand. But it is going to have to relate to a certain
8 part?

9 A Right it has to cover everything that we identified
10 as potential pasts, right? So cruise control, floor mats,
11 ETC, accelerator pedal and so on. These are all the
12 different areas that we are exploring and we will continue on
13 each of those paths and identify what we can identify should
14 they exist. I'm not saying.

15 Q Internally in Exponent you have no timeframe for
16 when --

17 A We internally do not have a time frame.

18 BY MS. GASTON:

19 Q Are you allowed or required to report findings to
20 NHTSA if you find conditions that could lead to sudden
21 unintended acceleration?

22 A Are we required to report to NHTSA? I don't know
23 if we are required, but we would certainly inform NHTSA.
24 That is my understanding.

25 Q Would you inform them directly from Exponent or

1 would you inform them through Bowman & Brooke or Toyota?

2 A I see no reason why we won't inform NHTSA directly.

3 BY MR. LEVISS:

4 Q Will Exponent ultimately compile a record of all of
5 the work that it has done in this area?

6 A Yes.

7 Q And that will include all of the various analyses,
8 all of the inquiries you have made and their outcomes?

9 A Absolutely.

10 Q And what is the status of that report is that the
11 draft report you referred to yesterday?

12 A Yeah, I was referring to a work in progress that --
13 yes, that includes our findings from the different areas of
14 research that we are conducting. And your question is when?

15 Q No. It is just -- and that will track everything
16 Exponent has looked at and any conclusions it has reached?

17 A Correct.

18 BY MS. GASTON:

19 Q Can I ask, then, the Gilbert report that we looked
20 at earlier, was that the comprehensive record of the work
21 that Exponent had done on testing for the Gilbert matter?
22 Was that the written document that described everything
23 Exponent had done?

24 A That was our comprehensive record on the -- on our
25 analysis of Gilbert's demonstration.

1 BY MS. TINDALL:

2 Q So we can expect that level of specificity in the
3 comprehensive report of all of the experiments that Exponent
4 is undertaking?

5 A That level or deeper. I mean, it depends on the
6 issues that we are dealing with. Some of them we will have
7 to go into the depth of how the system operates and give you
8 details of which bits in the memory are flipped during our
9 experimentation.

10 BY MR. LEVISS:

11 Q Will Exponent make that ultimate comprehensive
12 report public?

13 A That is the one and same report that I have been
14 talking about that will be released to the public.

15 Q You will release it to the public?

16 A That is my understanding.

17 BY MS. GASTON:

18 Q And Exponent will release it directly to the
19 public?

20 A Again, the actual mechanisms I wouldn't be able to
21 talk to. But --

22 BY MS. TINDALL:

23 Q I mean, the two reports that we have seen from
24 Exponent so far have a title page and then notations that the
25 report is prepared for Bowman & Brooke, attorneys for Toyota

1 Motor Corporation prepared by Exponent Failure Analysis
2 Associates.

3 A Yes.

4 Q Do you expect the final report that we are
5 discussing here to be prepared for Bowman & Brooke to be
6 released as these first two reports have been released?

7 A I imagine that process would be consistent with how
8 those original two reports were produced.

9 BY MR. LEVISS:

10 Q Sitting here today, is there a time frame for when
11 that report will be available?

12 A No, not to my knowledge.

13 BY MR. COHEN:

14 Q It could be 5 years?

15 A I hope it doesn't take us that long. But if issues
16 continue to arise, I don't want to completely rule it out.

17 Q 10 years?

18 A Again, I'm not sure that it would be appropriate
19 for me to speculate as to how long it might take to do our
20 analysis. But we are working as efficiently and as
21 diligently as possible with the resources that we have in
22 putting them on board. And if we don't have the resources,
23 bringing them on externally to try to understand exactly what
24 is going on it is in our interest if there is an issue, if
25 there is a problem, to find it and to find it first. And we

1 want that to be sooner, the better.

2 BY MR. COHEN:

3 Q Can I ask you -- I have to run. I apologize.
4 You're a scientist, engineer?

5 A I'm an engineer, yes. And I characterize the work
6 that I do as consistent with the scientific methods.

7 Q What is your gut instinct here? Do you think
8 you're going to find something?

9 A As a scientist, I'm clearly unable to give you gut
10 instincts. My opinions would have to be based on data. I
11 think it would be speculative on my end.

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1 RPTS COCHRAN

2 DCMN BURRELL

3 [11:50 a.m.]

4 BY MS. GASTON:

5 Q Do you believe that Exponent's work to date
6 conclusively rules out electronic causes of sudden unintended
7 acceleration?

8 A I am sorry, can I have that again?

9 Q Do you believe that Exponent's work to date
10 conclusively rules out electronic causes of sudden unintended
11 acceleration?

12 A Do I think conclusively rules it out? Again, I
13 would say that we have been unable to find any root causes,
14 but that doesn't mean that if there is a problem that one
15 isn't there. If it is there, we are doing everything we can
16 to find it.

17 BY MS. TINDALL:

18 Q If you believe you had conclusively ruled out
19 causes of sudden unintended acceleration, what further work
20 would there be for you to do?

21 A If we -- well, if we conclusively ruled out all
22 reasonably possible paths that we are looking at, that there
23 is no other -- that we were at a dead-end on each and every
24 single category and sub-category we are pursuing and we have
25 been unable to identify a root cause, then, I haven't thought

1 exactly about how we would do that. But, I mean, then we
2 would say that we have not identified any root causes.

3 BY MR. LEVISS:

4 Q As a scientist, do you believe that Exponent's work
5 to date can be used to support the statement that electronics
6 played no role in sudden unintended acceleration?

7 A I think that based on our knowledge --

8 Q That is a yes or no question.

9 A Based on our knowledge to date, it can be used to
10 support that, but that doesn't mean that some other cause or
11 some other effect could be found in the future that does
12 involve electronics.

13 Q So is it appropriate to say that electronics plays
14 no role in sudden unintended acceleration based on what
15 Exponent has done?

16 A Based on our knowledge to date. That would be an
17 appropriate conclusion, based on what we know today.

18 Q So it would require the caveat "based on what we
19 know today?"

20 A I think that that would be a reasonable caveat.

21 BY MS. TINDALL:

22 Q Is that a required caveat?

23 A Is it a required caveat? I don't know. I think as
24 a scientist it would be reasonable to qualify a statement
25 based on what we know today.

1 BY MR. COHEN:

2 Q Can I ask a science question? I just judged a
3 fifth grade science fair a couple of days ago.

4 A I am sorry?

5 Q I just judged a fifth grade science fair a couple
6 of days ago.

7 A Yes.

8 Q One of the things that was on my checklist of
9 things I had to look for was the kid's hypothesis, did they
10 successfully describe their hypothesis.

11 A Okay.

12 Q What is your hypothesis here?

13 A I would say it is not just one hypothesis. We have
14 several hypotheses.

15 Q You already failed the fifth grade test.

16 A You wanted a description right off the bat, didn't
17 you? Well, I would say we have hypotheses on the
18 electromagnetic interference, that there could be some
19 interaction between electromagnetic interference and the
20 electronics on the chip that we are pursuing.

21 There is a possibility of electrostatic discharges.
22 That is another hypothesis we are pursuing, that ESD could
23 alter the state of the electronics in a way that is not
24 leaving a permanent mark behind, so that when you turn off
25 the vehicle, turn it back on again, it would appear to be

1 operating normally.

2 We are also currently exploring the hypothesis that
3 there may be runtime errors in the software that would allow
4 for buffer overflow.

5 So far we have been testing the software for such
6 events. We have not found any, but we are continuing with
7 our analysis.

8 There is a potential for voltage spikes that come in
9 from interference sources from within the vehicle that we are
10 studying.

11 There are potential causes with respect to the location
12 of the pedal, the accelerator pedal, that would involve or
13 include a pedal misapplication.

14 There are possible hypotheses that we are pursuing with
15 respect to the pedal sticking due to mechanical mechanisms so
16 the pedal gets pushed and gets stuck because of the
17 mechanical defect.

18 There are possibilities with respect to the floor mat
19 interfering with the pedal traveling from its zero position
20 to its full open position.

21 So these are the different hypothesis that we are
22 currently pursuing. And the way, as you know, that we would
23 test for them, is that we perform the inspections and the
24 investigations, test against the hypothesis, refine the
25 hypothesis, predict what would happen as a result of that

1 refined hypothesis, see if the test data supports it, and so
2 on and so forth, until we reach a conclusion.

3 Q So let's go back to almost the part of that answer.
4 I asked you for your gut instinct as a scientist. You gave
5 me an answer that I would probably get to, you shouldn't go
6 on gut instinct. But we formulate hypotheses and we make
7 predictions based on those hypotheses.

8 A Correct.

9 Q So based on the hypotheses that you have set out to
10 us, what are your predictions?

11 A Well, the predictions are that, say -- let's take
12 one, all right? Actually another one that I forgot to
13 mention was the effect of cosmic rays. So a hypothesis based
14 on the cosmic rays is that you would get a neutron that would
15 flip a bit in the static ram that is associated with a
16 particular processor, such as the main processor. So that
17 means that now, let's say that variable happens to control
18 what the throttle angle value should be, right? And it goes
19 from being, whatever, 6 degrees to 80 degrees.

20 So that is the hypothesis that we are currently, one of
21 the hypotheses that we are currently pursuing, is what is the
22 effect and what are the failsafe mechanisms that are in place
23 in the system that would protect against bit flipping due to
24 neutron bombardment from solar rays.

25 So the prediction is that bits will be flipped, and the

1 question then becomes, okay, well, that is the theory or that
2 is what the hypothesis predicts. What should be the final
3 result of that? That is something that we would test for.

4 BY MR. LEVISS:

5 Q For the various hypotheses that you just listed,
6 have you reached conclusions on all of these hypotheses?

7 A We are in process of analyzing them all, and they
8 are all being refined as we speak. So for example --

9 Q No, no, no, not for example. Have you reached
10 conclusions on the hypotheses?

11 A I would say that we have reached conclusions based
12 on information we know today, yes. On some of them, sure.

13 Q And have you published those conclusions?

14 A Not yet. Like I said, our analysis is ongoing and
15 it is incomplete.

16 Q So is it premature to reach a conclusion while your
17 work is ongoing?

18 A It would be premature, and if I were forced to say
19 anything, I would say given what we know today, we have not
20 found any potential root causes that would result in SUA.

21 BY MS. GASTON:

22 Q Have you conclusively eliminated the possibility of
23 a defect in the electronic throttle control system?

24 A Have we conclusively -- I am sorry?

25 Q Eliminated the possibility.

1 A Eliminated the possibility --

2 Q Eliminated the possibility of a defect in the ETCS?

3 A I would say that we have not yet completed our
4 analysis on the electronics, and based on what we know today,
5 we have not found any defects. Could some emerge in the
6 future? Possibly. So we will continue. But to date, we
7 have not found any.

8 Q Is there more work to be done before Exponent can
9 reach a conclusion about the possible role of electronics in
10 sudden unintended acceleration?

11 A Yes. Yes, there is plenty more work to be done.

12 BY MR. KOHL:

13 Q I had a last quick question. You said before it is
14 in your best interest to find a cause.

15 A Should there be a cause.

16 Q Right. What is your basis for that? Because I
17 think purely economically in my mind I would like an open-end
18 contract that you just get paid for doing. Because it is in
19 Toyota's best interest that you never find a problem, right?
20 So why is it in Exponent's best interest to find a problem?
21 Because -- do you get a bonus?

22 A Because --

23 Q I am just wondering.

24 A I get fame.

25 Q Right.

1 A Look, Exponent is -- you know, we have got like
2 300 --

3 Q You beat NASA to it?

4 A We are 300 pieces of an organization of 900 people.
5 If NASA is involved and NHTSA is involved and Exponent, we
6 want to be the first, if there is a problem, to find it,
7 because if we don't, then --

8 Q So it is a win-win situation?

9 A You bet.

10 Mr. Kohl. I am good.

11 Ms. Gaston. I think that concludes our questioning.

12 Thank you very much for being here.

13 [Whereupon, at 12:05 p.m., the interview was concluded.]

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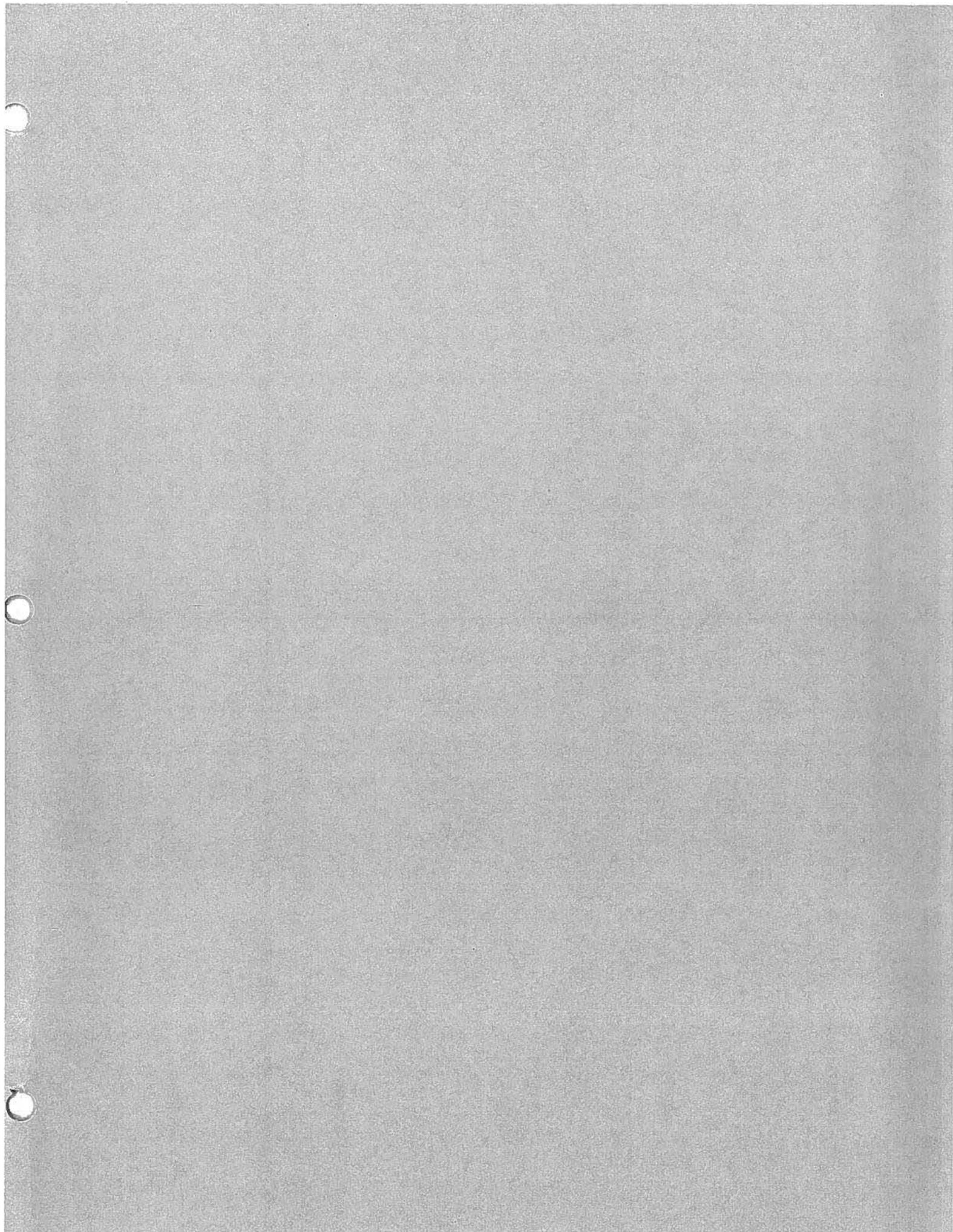
Certificate of Deponent/Interviewee

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I have read the foregoing 108 pages, which contain the correct transcript of the answers made by me to the questions therein recorded.

S. J. Saw
Witness Name

May 18, 2010
Date



ERATA SHEET
FOR CONTINUED INTERVIEW OF SHUKRI SOURI

<u>PAGE</u>	<u>LINE</u>	<u>CORRECTION</u>
3	15	Change “Allison” to “Alison.” Change requested by the Committee.
3	17	Change “Ann” to “Anne.” Change requested by the Committee.
7	7	Delete “an.” Change requested by witness.
7	8	Change “ETC” to “DTC.” Change requested by witness.
9	16	Change “PCD” to “PCB.” Change requested by witness.
13	22	Change “group” to “protocol.” Change requested by witness.
36	6	Change “resistor” to “resistive.” Change requested by witness.
36	11	Change “ETCs” to “DTCs.” Change requested by witness.
44	18	Change “Dr. Malady” to Dr. Malladi.” Change requested by the Committee.
44	19	Change “Dr. Malady” to “Dr. Malladi.” Change requested by the Committee.
46	3	Change “LEVIN” to “LEVISS.” Change requested by the Committee.
49	17	Change “ETCSI” to “ECSTS-i.” Change requested by the Committee.
49	24	Change “ETCSI” to “ECSTS-i.” Change requested by witness.
55	7	Change “EVCT” to “ABC.” Change requested by witness.
56	16-17	Change “Subodh Malady” to “Subbaiah Malladi.” Change requested by witness.
61	20-21	Change “Southern University of Illinois Carbondale” to “Southern Illinois University at Carbondale.” Change requested by witness.
63	25	Change “SUI” to “SIU.” Change requested by witness.
70	10	Question answered by Mr. James Firenec. Change requested by witness.

71	4	Change “resisters” to “resistors.” Change requested by witness.
73	15	Change “volts” to “faults.” Change requested by witness.
74	17	Change “controlled” to “control.” Change requested by witness.
77	8	Change “King” to “Kane.” Change requested by the Committee.
78	19	Change “resister” to “resistor.” Change requested by witness.
79	10	Change “resister” to “resistor.” Change requested by the Committee.
79	14	Change “resister” to “resistor.” Change requested by the Committee.
81	5	Change “resister” to “resistor.” Change requested by the Committee.
85	18	Add question mark (?) after “electronics.” Change requested by witness.
87	9	Change “due process” to “depends.” Change requested by witness.