

EA02-025

TEXAS INSTRUMENTS, INC.'S

9/10/03

REQUEST NO. 7

BOX 10

PART A - I

PART F

NO. C-4178-98-F..

████████████████████) IN THE DISTRICT COURT
)
VS.) HIDALGO COUNTY, TEXAS
)
VAN BURKLEO MOTORS,)
INC., FORD MOTOR)
COMPANY AND UNITED)
TECHNOLOGIES)
AUTOMOTIVE, INC.) 332ND JUDICIAL DISTRICT

ORAL DEPOSITION OF
STEVEN BERINGHAUSE
DECEMBER 17, 1999
Volume I

THE ORIGINAL OF THIS TRANSCRIPT
WILL BE IN THE CUSTODY OF:

MR. NORMAN JOLLY
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HOUSTON, TEXAS 77002
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COPY

*Corrections made
2/2/00
AKK*

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TI-NHTSA 015893

1 ORAL DEPOSITION of [REDACTED] produced
2 as a witness at the instance of the Plaintiffs, and
3 duly sworn, was taken in the above-styled and
4 numbered cause on the 17th day of December, 1999,
5 from 10:01 a.m. to 4:34 p.m., before C. Lee Parks,
6 Certified Shorthand Reporter in and for the State of
7 Texas, reported by computerized stenotype machine,
8 at the offices of Susman, Godfrey, 1000 Louisiana,
9 Suite 5100, Houston, Texas, pursuant to the Texas
10 Rules of Civil Procedure and the provisions stated
11 on the record or attached hereto.

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22
23
24
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INDEX

PAGE

Examination by MR. NORMAN JOLLY.....	8
Examination by Mr. Manske.....	236
Witness' Signature Page/Corrections.....	278
Reporter's Certificate.....	280

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2
3
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16
17
18
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20
21
22
23
24
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E X H I B I T S

EXHIBIT	DESCRIPTION	PAGE
No. 1	Ford Pleadings	13
No. 2	McGuirk Letter	13
No. 3	Switch Test Photos	29
No. 4	Switch Test Photos	29
No. 5	500 FN131 Notes	90
No. 6	Switch Scenario	100
No. 7	Ford Data Documents	207
No. 8	Switch Profile Chart	234
No. 9	Design Reference List	238
No. 10	Key Features Document	247
No. 11	Switch Overview	247
No. 12	TI Part Numbers & Notes	259

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TI-NHTSA 016589

1 THE VIDEOGRAPHER: We are on the
2 record. The time now is 10:01. Today's date is
3 December 17th, 1999.

4 [REDACTED]
5 having been first duly sworn, testified as follows:

6 EXAMINATION

7 Q. (BY MR. JOLLY) Sir, introduce yourself to
8 the juries that are going to hear these cases at
9 trial.

10 A. My name is [REDACTED]

11 Q. Tell us about yourself.

12 A. I currently live in Massachusetts. I'm an
13 engineering manager at Texas Instruments.

14 Q. That's it?

15 A. Anything else?

16 Q. College?

17 A. I went to Massachusetts Institute of
18 Technology, got a Bachelor's Degree in Mechanical
19 Engineering, graduated in 1987; continued on at MIT
20 for a Master's Degree in Mechanical Engineering,
21 graduated in 1988.

22 Q. Why are you here?

23 A. I'm here in -- to respond to the
24 Deposition Notice to -- to provide you the best
25 answers that can I to -- to the questions you pose.

1 Q. For who?

2 A. For Texas Instruments.

3 Q. What does that mean to you?

4 A. I'm a corporate representative of Texas
5 Instruments.

6 Q. What does that mean, just your
7 understanding?

8 A. My understanding is, as an employee of
9 Texas Instruments and being involved in -- in the
10 work being done at Texas Instruments, I'm here to --
11 to answer the questions that you pose.

12 Q. Okay. Do you also understand that you're
13 supposed to be the person here representing Texas
14 Instruments as the person with the most knowledge of
15 the subject matters that we've identified in the
16 Deposition Notice?

17 A. Gone through the -- the list of subject
18 matters and I do have knowledge in those areas and
19 I'll try and answer. I'm prepared to answer
20 whatever questions you ask.

21 Q. My question dealt also with the part about
22 the person with the most knowledge.

23 MS. ALVAREZ: And in that respect, if
24 I may interrupt, he's the one person with the most
25 knowledge as to all the areas. He may have more

1 knowledge in one or another, but he is the one with
2 the most knowledge in all the areas.

3 MR. JOLLY: Are -- Are we doing this
4 by the Rules?

5 MS. ALVAREZ: Yes.

6 MR. JOLLY: Okay.

7 Q. Okay. So there might be other people at
8 TI who might possess more knowledge about some of
9 the individual --

10 A. In one specific area, yes, that's correct.

11 Q. He takes down one voice at a time. Okay?

12 A. Yes.

13 Q. Given a depo before?

14 A. No, I have not.

15 Q. How many hours have you been preparing for
16 today?

17 A. I'm not sure exactly how many hours.

18 Q. How many days?

19 A. I've -- I've spent time preparing.

20 Q. How much?

21 A. I'm not sure of the exact number.

22 Q. Range?

23 A. Few days.

24 Q. Okay. Eight-hour days, 10-hour days,
25 12-hour days?

1 A. Six-hour, eight-hour days.

2 Q. So you've been preparing for this
3 deposition somewhere in the neighborhood of 18 to 24
4 hours. Fair?

5 A. Somewhere around there.

6 Q. Okay. What did you do?

7 A. In preparation?

8 Q. Yeah. Well, for the past 18 to 24 hours
9 that you've been preparing for this depo, what did
10 you do?

11 MS. ALVAREZ: I want to object to
12 that to the extent it does call for any
13 attorney-client privileged information. And in that
14 respect we'd instruct the witness not to answer as
15 to attorney-client privileged information.

16 Q. Yeah. You don't have to tell us what the
17 TI lawyers told you. I just want to know what you
18 did.

19 A. I reviewed some -- some data. I reviewed
20 some tests that TI had done.

21 Q. When?

22 MS. ALVAREZ: Objection, form.

23 Q. When did you review these tests and data?

24 A. Over the past few weeks.

25 Q. Where?

1 A. Different places. At Texas Instruments,
2 at -- at home.

3 Q. What tests?

4 A. I don't remember exactly which ones.
5 Different tests that -- that we had run.

6 Q. Tests on what?

7 A. Tests on the pressure switch.

8 Q. Is that what you're calling it?

9 A. Calling what, the --

10 Q. The switch.

11 A. The -- Yes, pressure switch.

12 Q. The pressure switch?

13 A. Yes.

14 Q. You don't remember any tests that TI ran
15 on the pressure switch that you reviewed?

16 A. I remember reviewing tests we ran where we
17 try to -- well, where we filled parts with brake
18 fluid, where we filled parts with salt water. I
19 can -- I can talk about why those tests -- I brought
20 a document with me which includes a lot of the --
21 the key tests that we run that I thought would be
22 helpful in answering some of those questions. If
23 you'd like, I can go into some of the details on
24 those tests now.

25 Q. May I have that, please?

1 A. Sure.

2 Q. What do you want to call this that you're
3 handing me?

4 A. I think there's a document number on
5 there. We provided that as part of discovery.
6 There's a letter from TI to Ford with some
7 attachments.

8 Q. Okay. But I mean, if you're setting
9 around talking to your wife or whomever about this
10 document you've handed me, what would you call it?

11 A. That was called a letter, was sent from --
12 from Andy McGuirk to Ford.

13 Q. Andy who?

14 A. Andy McGuirk.

15 Q. McGuirk?

16 A. Yes.

17 Q. Spell that name.

18 A. M-c-G-u-i-r-k.

19 Q. He's with Ford?

20 A. No. He's with Texas Instruments.

21 Q. What does he do over there?

22 A. He's our quality manager in our automotive
23 business.

24 Q. Okay. So we'll just call this Exhibit No.
25 2. We'll talk about Exhibit No. 1 in a minute. So

1 Exhibit No. 2 is a letter from Andy McGuirk to whom?

2 (Exhibit No. 2 marked.)

3 A. To Fred Porter.

4 Q. Who is that?

5 A. He is a -- an engineering supervisor at
6 Ford and someone we worked with on -- on discussion
7 around their investigation on underhood fires in the
8 Town Car.

9 Q. Okay. We'll come back to No. 2. Have you
10 seen what Ford has said recently --

11 A. I'm not sure what you mean by what Ford
12 has said recently.

13 Q. I wasn't -- I'm sorry. I wasn't finished.
14 Have you seen what Ford has said recently in -- in
15 the pleadings that Ford has filed with the Court
16 (Indicating)? We'll call that No. 1.

17 (Exhibit No. 1 marked.)

18 A. I have not seen this document before.

19 Q. Okay. Well, turn the page.

20 A. (Witness complies.)

21 Q. Why don't you read the first highlighted
22 paragraph there on Page 2 of Exhibit 1 out loud,
23 please.

24 A. To the extent that a limited number of
25 1992-1993 Ford LTD, Crown Victoria, Lincoln Town Car

1 and Mercury Grand Marquis vehicles contain speed
2 control deactivation switches which have experienced
3 a problem with arcing (and thus with the potential
4 for fire), Ford contends that such problems are the
5 result of a manufacturing defect caused ~~by~~ Texas
6 Instruments in assembling such switches.

7 Q. Okay. Is that true?

8 A. That is not true.

9 Q. All right. Please tell me why that is not
10 true.

11 MS. ALVAREZ: Objection, form.

12 A. Why what is not true?

13 Q. Why what you just read is not true.

14 A. TI did not manufacture any switches that
15 did not meet specification.

16 Q. Okay. And that's it? Anything else that
17 you can tell us that would be facts which would
18 support that what Ford has said on Exhibit 1 in the
19 paragraph that you read is not true other than what
20 you just said?

21 MS. ALVAREZ: Objection, form.

22 A. I don't know of any problem with arcing,
23 don't know that pressure switches have caused any
24 vehicle fires, don't know of any manufacturing
25 defects caused ~~by~~ Texas Instruments in such

1 switches.

2 Q. You don't know that any pressure switch
3 made by TI has caused a fire?

4 A. That's correct.

5 Q. Okay. How many cars have you looked at?

6 A. I've looked at five vehicles.

7 Q. Whose vehicle?

8 A. I looked at the Gonzales vehicle, the
9 Ramos vehicle, the Amos vehicle, the Krupp vehicle
10 and Hinojosa vehicle.

11 Q. You've looked at no other Panther vehicles
12 other than those five?

13 A. Panther vehicles that have been in fires,
14 just those five.

15 Q. Who's looking at all the other ones all
16 around the country that have caught fire at TI?

17 A. I knew that Russ ^{Bayman} ~~Bowman~~ looked at the
18 Payne vehicle. And I'm not aware of any other
19 vehicles that -- Well, actually, can -- can you
20 reask that question? I'm not sure if I fully
21 answered your question good.

22 Q. Okay. You've looked at five Panthers that
23 caught fire?

24 A. Yes.

25 Q. There are other Panthers that have caught

1 fire, allegedly, because a pressure switch caused a
2 fire, right?

3 A. Well, I'm not sure. I don't know of any
4 of -- I don't know of any vehicles that caught fire
5 due to a pressure -- due to the pressure switch.

6 Q. Allegedly?

7 A. Allegedly.

8 Q. How many have allegedly caught fire?

9 A. I think there are -- are nine vehicle
10 fires that -- that -- that TI is in a -- that TI has
11 been -- allegedly claimed that there was a fire.

12 Q. Okay. So in all the other cases around
13 the country, the only cases where TI has been sued
14 are the cases that I'm handling, is that what you're
15 saying?

16 A. There's one case in Mississippi which I
17 think is being handled by -- handled by a different
18 attorney.

19 Q. Who is that lawyer?

20 A. I think the firm is Scruggs' firm.

21 Q. How much time did you spend looking at
22 [REDACTED] car?

23 A. I don't remember the exact time.

24 Q. It was video taped, wasn't it?

25 A. Yes, it was.

1 Q. It was video taped during the entire time
2 that you spent inspecting that car?

3 A. I don't know whether it was or not. I was
4 not paying attention to the video camera.

5 Q. Okay. Well, there was a video camera
6 there, correct?

7 A. Yes, there was.

8 Q. I was told that the inspection that you
9 conducted on the [REDACTED] vehicle did not exceed 15
10 minutes. Would that be correct?

11 A. I'm not sure on the exact time. I would
12 have guessed, closer to 20 minutes or a half hour.

13 Q. Okay. Twenty minutes to thirty minutes
14 inspecting [REDACTED] car?

15 A. Somewhere around that amount of time.

16 Q. And in that 20 to 30 minutes you concluded
17 that the TI pressure switch did not cause [REDACTED]
18 car to catch fire?

19 A. I did not conclude what the cause of that
20 fire was.

21 Q. Oh, okay. So in other words, you can't
22 say that the switch didn't cause the fire?

23 A. I don't know the reason that vehicle
24 caught fire.

25 Q. I guess what you're saying is is that in

1 30 minutes it'd be pretty hard to determine in that
2 amount of time period when you're inspecting Pauline
3 Gonzalez's car to determine that the TI pressure
4 switch did not cause the fire?

5 A. No. That's not what I'm saying. What I'm
6 saying is, I don't have the expertise to determine
7 what caused the fire and in inspecting that fire,
8 the TI pressure switch was not even present.

9 Q. Why are you inspecting cars if you can't
10 determine by inspecting the car if the TI switch
11 caused the fire?

12 A. I -- I have a good understanding of TI's
13 pressure switch. I have been involved in -- in
14 working on TI's investigation with Ford on this
15 matter and I went to see what type of damage there
16 was to the vehicles.

17 Q. Did [REDACTED] car have the TI
18 pressure switch on it that is the subject of the
19 recall?

20 MS. ALVAREZ: Objection, form.

21 A. The -- The vehicle that -- that I reviewed
22 did not have a pressure switch on it.

23 Q. Was it manufactured with a pressure switch
24 that was the subject of the recall?

25 A. I don't know. I don't know if the

1 pressure switch was originally on that vehicle or
2 not.

3 Q. That's not my question.

4 A. I don't know the exact date of manufacture
5 of that vehicle to know whether it was within the
6 time period of the recall.

7 Q. Okay. So you can't say whether or not any
8 of the cars that you've inspected were cars that
9 were manufactured with the switch -- the pressure
10 switch that's the subject of the recall?

11 A. I have not reviewed the specific dates
12 around the vehicle manufacture of those vehicles.

13 Q. All right. Who at TI would know that?

14 A. I'm not sure.

15 Q. What's going on with this recall?

16 MS. ALVAREZ: Objection, form.

17 A. What do you mean, what's go on with the
18 recall?

19 Q. What are you going to do? What is TI
20 going to do?

21 A. What is TI going to do about what?

22 Q. Yeah. Are they going to pay for it?

23 A. TI's been -- not been asked to pay for the
24 recall.

25 Q. Ford has not asked TI to pay for the

1 recall?

2 A. Not that I'm aware of.

3 Q. Ford has not asked TI to pay for the costs
4 associated with the losses caused by any of these
5 fires?

6 A. I think Ford has asked TI for
7 indemnification on -- on the vehicle fires.

8 Q. What's that mean?

9 A. I think Ford has asked TI to take
10 responsibility for those fires.

11 Q. And that means pay for it?

12 A. Yes.

13 Q. And so what's TI say about that request?

14 A. TI has said that that request is
15 unreasonable because there's no evidence that TI's
16 pressure switches caused any vehicle fires.

17 Q. Okay. Now, what were you saying earlier
18 about the specifications?

19 MS. ALVAREZ: Objection, form.

20 A. What do you mean? I'm not sure --

21 Q. You said something about the switch was
22 made pursuant to specifications provided by Ford.
23 What are you talking about?

24 A. When Ford asked us to develop the switch
25 for them, they provided a specification. We design

1 and test the switch to that specification.

2 Q. What does that mean, Ford provides the
3 specifications?

4 A. Ford provides the information to TI for
5 what the performance aspects of the switch need to
6 be.

7 Q. All right. And so what -- what were
8 those?

9 A. There's a -- There's a long list of -- of
10 different specifications around which pressure the
11 switch needs to open, which pressure it needs to
12 close, what connector should be used, what
13 environmental exposure the switch may be exposed to.

14 Q. I don't -- I don't mean to cut you off.
15 Why don't we do it this way: Why don't you tell us
16 which of the specifications Ford provided which
17 would be relevant to the switch causing a fire?

18 MS. ALVAREZ: Objection, form.

19 A. I'm not aware of the switch causing any
20 fires.

21 Q. Now, that's not my question. The
22 specifications that Ford provided which could be
23 relevant to whether or not the switches cause a fire.

24 MS. ALVAREZ: Objection, form.

25 A. Ford has the system expertise and system

1 understanding that -- and they, based on that system
2 understanding, provide a specification to us of what
3 the pressure switch needs to meet.

4 Q. Yeah. Well, I -- I mean, you know an
5 electrical switch can cause a fire, don't you?

6 A. No.

7 Q. Electrical switches can't cause fires,
8 you -- you've never heard that before?

9 A. Not without power being applied --

10 Q. Okay.

11 A. -- and a certain amount of power being
12 applied.

13 Q. Electrical switches with power being
14 applied can cause fires?

15 MS. ALVAREZ: Objection, form.

16 Q. Yes?

17 A. I imagine it's possible in the -- in the
18 right situation and the right circumstances. I
19 don't -- I don't know any specific ^{instances}

20 Q. Well, you haven't looked at all these Ford
21 documents that Ford produced where some mechanic saw
22 the fire -- the switch catch fire right in front of
23 their eyes?

24 A. I saw some Ford documents that said that,
25 yes.

1 Q. I mean, you're not calling those mechanics
2 that saw -- saw that fibbers, are you?

3 A. I'm not saying they lied. I just don't
4 know the details of those situations.

5 Q. All right. So electrical switches under
6 power can cause fires --

7 MS. ALVAREZ: Objection --

8 Q. -- agreed?

9 MS. ALVAREZ: -- form.

10 A. I -- I don't know. I mean, it depends on
11 the specific situation.

12 Q. Okay. Under some situations electrical
13 switches that are under power can cause fires?

14 A. And if you're -- if you're asking me if
15 there's ever a possibility, I mean, anything can
16 cause a fire under the right situation.

17 Q. Okay. And so thinking about that and
18 thinking about the specifications that Ford gave TI,
19 of that long list of specifications, which would be
20 relevant to whether or not the switch might cause a
21 fire?

22 MS. ALVAREZ: Objection, form.

23 A. It's hard for me to -- to answer that
24 without having a full system understanding.

25 Q. You don't have a full system understanding

1 of the pressure switch we're here talking about?

2 A. I have full understanding of the pressure
3 switch. I don't have a full understanding of the --
4 of the entire Ford system.

5 Q. Okay.

6 A. You need to understand how -- how the
7 development of the product works. Ford understands
8 the full system and the full vehicle. They're the
9 system integrator. We provide one small component
10 switch into that system. They're integrating it
11 with many other components. They have the system
12 knowledge of how that full system comes together.

13 Q. Okay. Do you know that the switch is
14 wired hot all the time?

15 A. I do know that now.

16 Q. All right. So is that something that
17 Texas Instruments should've been told in the
18 specifications? Is that what you're saying?

19 A. It's Ford's responsibility to look at the
20 full system and make sure that they provide to Texas
21 Instruments the important pieces of information
22 to -- in order to design that switch.

23 MR. JOLLY: Objection, nonresponsive.

24 Q. Are you saying that Ford should have given
25 Texas Instruments a design criteria specification

1 that included the knowledge that the switch would be
2 wired hot all the time, seven days a week, 24 hours
3 a day --

4 MS. ALVARES: Objection, form.

5 MR. MANSKE: Join --

6 Q. -- with the ignition off?

7 MR. MANSKE: Ford joins in the
8 objection.

9 A. Can -- Can you repeat the question?

10 Q. Are you saying that Ford should have
11 provided Texas Instruments with a design
12 specification list which included the fact that the
13 TI pressure switch that we're here talking about was
14 wired hot all the time with the ignition off?

15 A. I don't know whether Ford should provide
16 that or not. It's Ford's responsibility to make
17 sure that in the system and how the system operates,
18 that the -- that the specification they provide to
19 the switch -- help us design the switch, there's --
20 knowing that information doesn't change how we
21 design the switch.

22 Q. Okay. Does the fact that the switch is
23 wired hot all the time have anything to do with the
24 fact that the switch may have caused fires?

25 A. It is -- It is necessary to have power

1 applied to the -- to any switch in order for a fire
2 to occur.

3 Q. Did TI know that when TI designed the
4 switch?

5 A. Did TI --

6 MS. ALVAREZ: Objection, form.

7 A. Did TI know what?

8 Q. That the switch was wired hot all the
9 time?

10 A. TI did not know that.

11 Q. When did Texas Instruments become aware of
12 the fact that the switches were wired hot all the
13 time?

14 A. ~~late in 1998~~ *late in 1999, I believe*

15 Q. How did that come about?

16 A. *I learned when*
17 *When Ford* talked to us about the
18 investigation they were doing on underhood fires on
19 the Town Car and they talked about the -- the switch
20 being potentially where the fire was starting,
21 they -- we reviewed with them the electrical
22 diagrams around how the switch was powered.

22 Q. Who's "we"?

23 A. Different people at Texas Instruments and
24 people at Ford.

25 Q. Who is "we" when it comes to Texas

1 Instruments?

2 A. Myself and other engineers in a group.

3 It's a list of people.

4 Q. Who?

5 A. In -- In this case -- In this specific
6 case under review?

7 Q. Yeah.

8 A. ^{Bryan} Brian Dague was involved, Andy ^{McGuirk} McGuirk was
9 involved. Those are the only people I think of
10 right now.

11 Q. All right. Was anyone at TI surprised to
12 learn at this meeting that -- that Ford had wired
13 the switches hot all the time with the ignition off?

14 MS. ALVAREZ: Objection, form.

15 A. Can you repeat the question?

16 Q. Was anyone at Texas Instruments surprised
17 when you learned at this meeting that the switches
18 were wired hot --

19 MS. ALVAREZ: Objection, form.

20 Q. -- with the ignition off?

21 A. We were surprised that the switch was
22 continuously powered in the system.

23 Q. Why?

24 A. Because based on our understanding of the
25 switch, we did not see why the switch would need to

1 be powered continuously.

2 Q. All right. So what did you say? What did
3 anyone at TI say for to Ford about that?

4 A. We asked why it was powered continuously.

5 Q. What did the folks at Ford say?

6 A. Said their design guidelines said that it
7 needed to be powered continuously.

8 Q. Why does it need to be powered
9 continuously?

10 A. I don't know.

11 Q. Who at Ford said that it did?

12 A. I don't remember exactly who.

13 Q. At this meeting, who was there from Ford?

14 A. I don't remember.

15 Q. You don't remember one person's name at --
16 that was at this meeting where Ford and TI discussed
17 the fact for the first time in 1998 that the TI
18 switches were wired hot with the ignition off?

19 A. I'm -- I'm not a hundred percent sure. It
20 was a phone conversation, conference call, and I'm
21 not a hundred percent sure.

22 Q. How many people from Ford were on the
23 phone conference?

24 A. I'm not sure. I don't remember exactly.

25 Q. How many meetings have there been between

1 anyone from TI and anyone from Ford besides the '98
2 phone conference that you just mentioned where the
3 fact that the switch was wired hot was discussed?

4 A. Including phone conversations?

5 Q. Yes.

6 A. I'm not sure of the exact number. ^{or so} ~~of~~
7 meetings.

8 Q. So you've had over ten meetings discussing
9 the fact that the switch is wired hot --

10 A. Where --

11 Q. -- meetings with Ford?

12 A. Where that point came up during the
13 meeting, somewhere on that order.

14 Q. I mean, once the cat's out of the bag, why
15 keep talking about it? Why did y'all keep talking
16 about it over and over and over again ten times?

17 A. Because as we discussed further issues
18 related to corrosion going on in the switch, the
19 power being applied to the switch is what would
20 drive the corrosion.

21 Q. Okay. Earlier we were talking about this
22 switch catching fire. Have you ever seen Exhibits 3
23 or 4?

24 (Exhibits 3 and 4 marked.)

25 A. I'm not sure if I've seen these exact

1 pictures, but I've seen the test setup where this
2 testing was done.

3 Q. What testing?

4 A. This testing was done at Texas Instruments
5 where we were trying to see if there was anything we
6 could do to the switch under the -- the power
7 conditions to get the switch to ignite.

8 Q. Did it?

9 A. And during -- during one type of test,
10 yes, we were able to get the switch to ignite.

11 Q. Okay. So TI pressure switches can catch
12 fire then?

13 MS. ALVAREZ: Objection, form.

14 A. In a lab experiment under controlled
15 conditions, we were able to get a pressure switch to
16 ignite.

17 MR. JOLLY: Objection, nonresponsive.

18 Q. TI pressure switches can catch fire, can't
19 they, sir?

20 A. In certain --

21 MS. ALVAREZ: Objection, form.

22 A. In certain conditions. We were able to
23 prove in the lab under a defined condition we could
24 get the switch to ignite.

25 Q. All right. So can you say that TI

1 pressure switches catch fire in the lab, but don't
2 catch fire in cars?

3 MS. ALVAREZ: Objection, form.

4 A. I don't know whether there have been any
5 fires in cars related to TI switches. All I know is
6 that in the lab experiment that we run here -- I'd
7 be happy to explain the experiment to you we were
8 running -- we were able to get switches to ignite.

9 Q. So you can't say one way or the other
10 whether TI pressure switches catch fire in cars?

11 A. That's correct.

12 Q. What is this (indicating) on Exhibit 3
13 that I've highlighted in blue that appears to be on
14 fire and flaming on Exhibit 3?

15 A. That is a -- a TI pressure switch and the
16 mating connector connected to the switch.

17 Q. Well, are there -- are those TI pressure
18 switches in a row or something?

19 A. Yes.

20 Q. All right. So how many have you got in
21 that row on Exhibit 3?

22 A. Looks like five switches.

23 Q. And how many of those five switches on
24 Exhibit 3 caught fire, two?

25 A. It looks like two.

1 Q. Two out of five caught fire in that test
2 on Exhibit 3, right?

3 A. (Witness nods head.)

4 Q. Is that a good success rate for TI
5 switches, that when you make a TI switch, two out of
6 five catch fire?

7 MS. ALVAREZ: Objection, form.

8 A. During these lab experiments -- Okay --
9 where we're controlling the environment, we're doing
10 things, injecting saltwater in the switch, applying
11 significant power to the switch, we could roughly
12 get a switch to ignite half the time.

13 MR. JOLLY: Objection, nonresponsive.

14 Q. Is that get -- Is that a good success
15 rate, that TI makes pressure switches and then runs
16 some tests on them and two out of the five catch
17 fire, sir?

18 MS. ALVAREZ: Objection, form.

19 A. These were very specific lab tests that
20 were run.

21 MR. JOLLY: Objection, nonresponsive.

22 Q. Is that a good success rate, for a TI
23 pressure switch to be run through a test and have
24 two out of five catch fire?

25 MS. ALVAREZ: Objection, form.

1 A. What -- What do you mean by a good success
2 rate?

3 Q. Well, what do you think that means?

4 A. I'm not sure.

5 Q. Well, let's say, for example, that you
6 make five switches and you run them through some
7 tests and none of them catch fire. Would that be
8 better than to run the same test and have two out of
9 five catch fire?

10 A. These were -- These tests we were running
11 were not standard tests that -- that were defined in
12 the specification or provided to us. These were not
13 standard pressure switch tests.

14 Q. Okay.

15 MR. JOLLY: Objection, nonresponsive.

16 Q. Would it be better if TI had run these
17 tests on Exhibits 3 and 4 and had five switches not
18 catch fire rather than two out of five? Wouldn't
19 that be better?

20 A. I'm not sure what you mean by better.
21 During -- The purpose of the test, we were trying to
22 find, was there any way to get a switch to ignite.

23 Q. Right. And don't you agree that it
24 would've been better -- a better result during the
25 testing if none of the switches had caught fire as

1 opposed to two out of five?

2 A. I -- I -- I don't know how to answer it
3 any other way. We were running controlled
4 experiments through a controlled process, trying
5 to -- we injected the switches with saltwater,
6 powering them up with -- with high levels of power
7 to see if we can get a switch to ignite. I don't
8 know how to answer it any -- any other different
9 way.

10 Q. Okay. So after the tests that were
11 photographed here on Exhibits 3 and 4, no one at TI
12 said, we can do better than this?

13 MS. ALVAREZ: Objection, form.

14 A. I don't know what you mean by better than
15 this.

16 Q. No one at TI said after the tests in
17 Exhibits 3 and 4 were run, no one said -- You or
18 anyone else -- Well, maybe we ought to make a switch
19 so that when we run tests, two out of five don't
20 catch fire? No one said that?

21 MS. ALVAREZ: Objection, form.

22 A. We discussed the rels (sic) -- results of
23 the switch, the results of this testing and -- and
24 reviewed what the conditions were that resulted in
25 the switches catching on fire in this test.

1 Q. Okay. And the results of the test, were
2 they good?

3 I mean, engineers don't say that? What do they
4 say if they don't say, this was good or this was bad
5 or this should be better? What do engineers say?
6 You tell me.

7 MS. ALVAREZ: Objection, form.

8 A. I'm not sure what you mean.

9 Q. You don't know what I mean by good, better
10 or improved --

11 A. Well, good --

12 Q. -- or bad?

13 A. You know, good's a relative term.

14 Q. Okay. So did the switch need
15 improvements? Do you understand that word,
16 improvements?

17 A. The conditions during this test -- Okay --
18 were not conditions specified in the specification
19 that the switch was trying to meet.

20 MR. JOLLY: Objection, nonresponsive.

21 Q. Did the switch need some improvements?

22 A. The switch met all specifications.

23 MR. JOLLY: Objection, nonresponsive.

24 Q. Did the switch need some improvements
25 after the tests on 3 and 4?

1 MS. ALVAREZ: Objection, form.

2 A. There is no changes that we knew of to the
3 switch that could prevent this situation from
4 occurring in the conditions of the test.

5 Q. All right. So two out of five switches
6 catch fire and that's good enough for TI?

7 MS. ALVAREZ: Objection, form.

8 A. That's not what I'm saying. You're --
9 You're not summarizing me correctly.

10 Q. All right. Summarize yourself correctly
11 then.

12 A. What I'm saying is, during this test, the
13 injection of saltwater, the amount of power that was
14 applied to the switch allowed the switch to catch
15 fire.

16 Q. Okay.

17 A. The best way to prevent that is prevent
18 those conditions from happening.

19 Q. Okay. So don't drive through saltwater
20 and when -- what else?

21 A. That would be -- The connector itself --
22 Okay -- is supposed to provide a seal to the switch.
23 We purposely drilled a hole in the connector during
24 this test to allow the injection of saltwater into
25 the switch.

1 Q. Okay. Who's responsible for the connector
2 seal, TI or Ford.

3 A. Ford.

4 Q. All right. What else caused the fire
5 under these laboratory conditions that you're
6 describing?

7 A. The high power that was available to the
8 switch.

9 Q. Who's responsible for that, TI or Ford?

10 A. Ford.

11 Q. Did you mention this to Ford?

12 A. Yes, we did.

13 Q. Who mentioned it to Ford?

14 A. I mentioned it to Ford.

15 Q. Who did you mention it to?

16 A. Fred Porter.

17 Q. What did you say?

18 A. Told him we had run this experiment and I
19 explained to him what the results of the experiments
20 were.

21 Q. Okay. How does saltwater cause the TI
22 pressure switch to catch fire?

23 A. In -- In this test, by injecting saltwater
24 into the part and having the part powered, connected
25 to a 14 volt power source (sic.) -- source to

1 simulate the battery and grounding the hex port of
2 the device, by injecting saltwater provides a
3 conductive path from the terminals of the switch,
4 that ~~connective~~ ^{are connected to} 14 volts, to the grounded hex port
5 and the current flows through the saltwater,
6 corroding the contact elements inside the switch.

7 Q. Okay. So the power that was applied to
8 the switch in these tests that you're talking about
9 was no different than the power that the switches
10 would receive in the vehicles, correct?

11 A. We simulated the 14 volts with a power
12 supply and allowed the switch to see up to 15 amps,
13 which our current understanding from Ford is the
14 maximum power the switches could see in the vehicle.

15 Q. Okay. So the answer to my question is is
16 that the power that the switches received in these
17 tests was no different than the power that the
18 switches received in the vehicles?

19 A. It was different in the terms of, we were
20 using a power supply instead of a car battery, but
21 we tried do simulate matching conditions.

22 Q. Okay. So the volts and -- The amps or the
23 watts were the same?

24 A. The volts and the allowable amps.

25 Q. Were the same in the tests as the volts in

1 the allowable amps when the switches are installed
2 in the vehicles, correct?

3 A. Yeah. Roughly, yes.

4 Q. Okay. So that, I guess, really didn't
5 have any effect on the specifications that you're
6 saying affected the switch catching fire --

7 MS. ALVAREZ: Objection --

8 Q. -- because TI knew about that, didn't
9 they, they knew about the volts and the amps when
10 they designed the switch?

11 A. No.

12 MS. ALVAREZ: Objection, form.

13 A. No. TI did not know the details around
14 what power was going to be available to the switch
15 during the design of the switch.

16 Q. TI built this pressure switch not knowing
17 what the volts and the amps were going to be and
18 then sold it to Ford not knowing that?

19 A. TI knew it was going to be connected to a
20 14 volt source, to a battery, but was not aware of
21 what allowable current was going to go through this
22 switch. That level of current is not needed for the
23 switch to operate.

24 Q. So TI can design this pressure switch
25 without knowing what the amperage is going to be?

1 A. It's impossible for TI to know every
2 aspect of this system. Ford is responsible for how
3 the -- the electrical architecture is set up for
4 this -- for the switch.

5 Q. How so? How was Ford responsible for
6 that?

7 A. They procure those components, they do the
8 electrical design.

9 Q. All right.

10 A. They install those components in the
11 vehicle.

12 Q. Okay. And is that some information that
13 you did not have when the switch was designed at
14 Texas Instruments?

15 A. Which information?

16 Q. The amperage.

17 A. We did not know the level of amperage that
18 could go through the switch.

19 Q. When did Texas Instruments first find out
20 about the level of amperage that would be going
21 through the switch -- TI pressure switch after it
22 was installed on the Panther vehicles?

23 A. It would've either been in late 1998 or
24 early 1999.

25 Q. Was -- Was TI surprised to learn what the

1 amperage was --

2 MS. ALVAREZ: Objection --

3 Q. -- in late 1998 --

4 MS. ALVAREZ: Objection, form.

5 Q. -- after the fact, after the switch was
6 designed?

7 MS. ALVAREZ: Objection, form.

8 A. We -- We were not aware that that much
9 power was going to be applied to the switch.

10 Q. My question was: Was anyone at TI
11 surprised to learn what the amperage was?

12 A. We did not --

13 MS. ALVAREZ: Objection, form.

14 A. We did not expect that that high amount of
15 current would be applied to the switch.

16 Q. Okay. So you were surprised?

17 A. We did not expect that that would be the
18 case.

19 Q. So you were surprised?

20 MS. ALVAREZ: Objection, form.

21 A. I -- I don't know if surprised is the
22 right word.

23 Q. How many meetings were there after that
24 first meeting wherein anyone at TI discussed with
25 anyone at Ford the fact that the amperage was more

1 than what TI had anticipated?

2 A. I -- I'm not sure. I don't remember
3 specifically how many times we discussed that the
4 amperage was more than we expected. At that point
5 we were dealing with the -- the situation as it was
6 and discussing the -- the -- the facts as they were.

7 Q. Who at Ford provided that information?

8 A. Fred Porter.

9 Q. Anyone else?

10 A. It's possible. There's no one else I
11 remember at this time.

12 Q. Did Ford mention whether or not they were
13 going to change the amount of amperage that would be
14 going through the switches?

15 A. That was one of the possibilities that was
16 discussed.

17 Q. Okay. Was it done? Was that done --

18 A. What?

19 Q. Was the amperage changed?

20 A. The amperage has not been changed, to my
21 knowledge.

22 Q. How is the amperage changed or -- in this
23 system? How would it be changed?

24 A. You could put in current limiting
25 resistors that would limit the amount of current

1 that goes to the switch, you could put in a lower
2 amp fuse so that if there was a higher amperage
3 condition, a fuse would blow. There's probably
4 several other ways that it can be done.

5 Q. That's all Ford's responsibility though,
6 right?

7 A. Yes.

8 Q. Anything that TI could do to the switch
9 that would allow for the switch to handle the
10 amperage that came as a surprise in late '98?

11 MS. ALVAREZ: Objection, form.

12 A. There's -- There's nothing that I can
13 think of at this time that could've been changed to
14 the switch. The -- It wasn't an issue of the switch
15 handling the amperage. It was the fact that that
16 much power is necessary in order to get ignition of
17 the plastic on the switch.

18 Q. Oh, okay. That's what catches fire, is
19 the plastic?

20 A. During our lab experiments, that's what we
21 saw catch fire, the plastic.

22 Q. Okay. Why is it that the plastic catches
23 fire?

24 A. The -- The -- After -- During these lab
25 experiments, after the corrosion was occurring

1 inside the switch, that -- that allowed a resistive
2 path to ground. That resistive path dissipated the
3 power that was being applied to the switch and it
4 dissipated the power in terms of heat and that heat
5 was high enough to start to melt the plastic and
6 eventually get the plastic to ignite.

7 Q. What is the amperage rating of this
8 switch?

9 A. I'm not sure off the top of my head.

10 Q. Okay. You had to think about that a
11 while, huh?

12 A. I wanted to make sure I answered you with
13 a truthful answer.

14 Q. Okay. You don't know what the amperage
15 rating is. What's the voltage rating?

16 A. It's a 14-volt switch.

17 Q. Okay. Is the amperage rating more than 15
18 amps?

19 A. The -- The testing on the switches has
20 never been tested that high that I'm aware of. It's
21 probably tested up to around one amp.

22 Q. So the specifications provided by Ford
23 during the design phase of the switch indicated that
24 the switch needed to be able to handle one amp?

25 A. I don't remember. I don't know.

1 Q. Did Texas Instruments, on its own without
2 any specification input from Ford, design this
3 switch to handle one amp without consulting with
4 Ford?

5 A. I'm not sure.

6 Q. Do you know of any circuit on a motor
7 vehicle that utilizes a one-amp fuse? Name one
8 circuit.

9 A. I don't know any.

10 Q. Name one circuit on a Panther that
11 utilizes a one-amp fuse or less.

12 MS. ALVAREZ: Objection, form.

13 A. I'm not familiar with the details around
14 the architecture on the Panther and what the fuses
15 are.

16 Q. All right. You don't know what the fuse
17 block has in it, what the amperage of the fuses are
18 in the fuse block, you don't know the first thing
19 about the fuse block or the circuits in --

20 A. I know --

21 Q. -- in a Panther fuse block?

22 A. I know that the fuse in -- the fuse on the
23 supply line to the switch is a 15-amp fuse.

24 Q. All right. And this switch that we're
25 talking about that everyone is alleging is causing

1 the fires, my eight or nine clients that I have -- I
2 think it's nine as of earlier this week -- was
3 designed to handle one amp and it's on a circuit
4 that produces up to 15 amps, correct?

5 MS. ALVAREZ: Objection, form.

6 A. I know there's a 15-amp fuse. Okay. The
7 current can be limited by many other different ways
8 besides a fuse.

9 Q. Right. My question was: If the switch
10 was designed do handle up to one amp and the circuit
11 that the switch is going to be utilized in is
12 designed to handle up to 15 amps; isn't that
13 correct?

14 A. I don't know the details around the switch
15 design --

16 Q. Are there any --

17 A. -- as far as maximum current.

18 Q. I'm sorry. Are there any -- Is there
19 anything between the 15-amp fuse and the TI pressure
20 switch which would reduce the amperage from the
21 maximum of the fuse -- the 15-amp fuse like you
22 described earlier, resistors and that sort of thing?

23 A. Nothing that I'm aware of now.

24 Q. All right. So then, I guess, since you're
25 an engineer, it'd be fair to say that the switch may

1 be exposed up to 15 amps in the vehicle, correct?

2 A. Based on --

3 Q. Any --

4 A. -- current understanding of the -- our
5 current understanding of the system architecture
6 today, yes, that's correct.

7 Q. That's not good; is it?

8 A. I don't know.

9 Q. Well, if you have a switch that is
10 designed to handle one amp and it has 15 amps going
11 through it, tell us that means.

12 A. I don't know that this switch is designed
13 to handle one amp.

14 Q. Well, that's what you said earlier.

15 A. No. I said --

16 MS. ALVAREZ: Objection --

17 A. -- I think it might be somewhere around
18 there. I'm not sure. That's what I said earlier.

19 Q. Well then, let's do it this way then:
20 Tell us what it means when you have a switch that's
21 designed to handle less than the circuit that it's
22 going to be placed into when it comes to amperage.

23 A. Just because the fuse is at 15 amps
24 doesn't mean that typical current will be up to 15
25 amps. In fact, in the Ford system there is a clutch

1 coil that would normally limit the -- the current --

2 Q. To --

3 A. -- lower than that.

4 Q. To what?

5 A. Roughly, around half an amp.

6 Q. Okay. All right. I asked you earlier if
7 there was something in the circuitry that would
8 limit the amperage.

9 A. No. You said, between the fuse and the
10 switch. Electrically, it's downstream of the
11 switch.

12 Q. Okay. The -- The fuse is downstream of
13 the switch?

14 A. No. The switch is -- It goes from power
15 through the fuse, then to the switch into the clutch
16 coil.

17 Q. Okay. So how's the clutch coil, if it's
18 on the other side of the circuit, going to limit the
19 amount of amperage going through the switch?

20 A. Because they're all connected in series
21 and the current flow for all components has to be
22 the same.

23 Q. Okay. So there is something in the
24 circuitry that limits the amperage?

25 A. Yes.

1 Q. And to your knowledge, would the switch be
2 exposed to amperage under any set of circumstances
3 that would exceed its design limits?

4 A. As I said, I'm not sure of the exact
5 design limits of the switch in terms of amperage.

6 Q. Okay. Has that been changed?

7 MS. ALVAREZ: Objection, form.

8 A. Has what been changed?

9 Q. The design specifications of the switch
10 with regards to its ability to handle a certain
11 amount of amperage.

12 A. No, there's not been any specifications
13 changed then.

14 Q. What is amperage?

15 A. Amperage is the amount of current that
16 flows.

17 Q. All right. What's that mean?

18 A. What does it mean?

19 Q. Yeah.

20 A. Essentially, the number of electrons
21 flowing through the wire over a certain amount of
22 the time or a number -- amount of charge flowing
23 through ~~electrons~~ ^{the wire} over a certain amount of time.

24 Q. Okay. Anything el -- else about the
25 switch that TI recommended to Ford which would

1 prevent these fires that are reflected on the tests
2 photographed in Exhibits 3 and 4 besides changing
3 the connector?

4 A. Yes. Yes, there is. Based on some tests
5 results that we -- that we ran, we recommended that
6 the -- that the amount of power that potentially
7 could be applied to the switch should be decreased
8 and limited, current limited. During this -- these
9 tests with the saltwater inside the switch, the
10 current that flows through the switch to the --
11 to -- to ground can be higher than that -- that half
12 an amp by adding a current limiter between the fuse
13 and the switch can prevent the current from being
14 that high.

15 Q. So Ford had the current limiter on the
16 wrong side of the switch?

17 A. I -- I don't know that.

18 Q. Well, did -- did Ford have the current
19 limiter on the wrong side of the switch?

20 A. I don't -- I know that if there was
21 current limiting -- Based on our testing, if there's
22 current limiting coming into the switch, that
23 ignition could not occur of the switch, based on our
24 lab tests.

25 Q. And it's -- what you know is is that the

1 cars that are alleged to have caught fire because of
2 TI pressure switches catching fire, the current
3 limiter was on the wrong side of the switch? And
4 when I say, on the wrong side of the switch, I mean
5 on the other side of the switch which is different
6 than the TI recommendation after this testing.

7 A. The -- There was -- There was -- I know
8 that there was no current limiting between --
9 between the power point and the switch. The
10 current limiting feature on the other side of the
11 switch was the clutch coil which is used to engage
12 the -- the cruise control.

13 Q. Okay. So this recommendation by TI to
14 Ford is -- is something that is different than the
15 present circuitry on the '92, '93 Panthers?

16 A. Yes. And let me clarify the discussion
17 around that. In our discussions with Ford, they
18 recommend that had we test the relay -- It was a
19 Ford relay in the circuit -- to see if that would
20 prevent any ignition of the switch. We -- We
21 procured some of those relays, put it in the
22 circuit. That relay limits the current to the
23 switch to about a hundred and eighty milli-amps or
24 two-hundred milli-amps. And we were unable to get
25 ignition of the switch during these same type of --

1 of lab experiments with that current limiting of
2 that relay in place.

3 Q. Okay. So limit the current or the
4 amperage to the switch on the side of the circuitry
5 that's between the switch and the fuse, and limit it
6 to about two-tenths of one amp, approximately?

7 A. Approximately, yes. Based on our
8 calculations there, the amount of wattage then to
9 the switch would be roughly .75 watts maximum. And
10 we were able to demonstrate that that was not enough
11 power to cause ignition of the switch.

12 Q. And if Ford had done that when they
13 originally designed these cars, then if the switches
14 are catching fire, this would've prevented it?

15 A. Based on our lab experiments, we were not
16 able to get the switch to ignite with that relay in
17 place currently.

18 Q. So is that a yes?

19 A. Potentially, yes.

20 Q. All right. What else?

21 MS. ALVAREZ: Objection, form.

22 Q. Besides limiting the current, what else
23 did TI recommend?

24 A. We recommended that the switch not be
25 powered continuously.

1 Q. So that's an alternative design that Ford
2 could've done if the switches are causing the fires
3 which would've prevented the fires, if the fires
4 occurred with the ignition off, because there
5 wouldn't be any current going to the switch? And if
6 there's no current going to the switch, there's
7 nothing to cause the fire, right?

8 A. Yes.

9 Q. And that's Ford's responsibility, correct?

10 A. Ford has the system and the electrical
11 architecture responsibility.

12 Q. Okay. And this may seem silly, but
13 that's -- I represent people whose cars burnt down
14 and some of whom their entire homes burned down.
15 That -- These recommendations to Ford, that's not my
16 clients' responsibility; is it?

17 A. It's Ford's responsibility to design the
18 system.

19 Q. Ford and Ford alone?

20 A. And any suppliers they're using on that
21 electrical system architecture. I'm not sure who --
22 what Ford has designed themselves and what they're
23 working with other suppliers on.

24 Q. Okay. Ford and it's suppliers and no one
25 else? I mean, you're not saying that the people

1 that buy these cars are responsible for the
2 circuitry, right?

3 A. No, I'm not saying that.

4 Q. I just want to make sure we're clear on
5 that.

6 A. Yes.

7 Q. Anything else --

8 MS. ALVAREZ: Objection, form.

9 Q. -- that --

10 A. What --

11 Q. -- was recommended?

12 A. If -- That document I brought, if I could
13 look at that again, because that was a letter that
14 we sent to Ford, that may help me to see if there
15 was anything else.

16 Q. We've marked that No. 2 now.

17 A. Okay. There's nothing else that I could
18 think of at this time.

19 Q. All right. Tell us about the Kapton.

20 A. What specifically --

21 MS. ALVAREZ: Objection, form.

22 A. -- about Kapton?

23 Q. Do you know about it?

24 A. About what about Kapton?

25 Q. Do you know anything about it?

- 1 A. I know some things about Kapton, yes.
- 2 Q. Okay. What do you know about it?
- 3 A. I know we use Kapton in our pressure
4 switches at TI.
- 5 Q. What is it?
- 6 A. Kapton is a polyimide. It's a polyimide
7 film that we buy from DuPont.
- 8 Q. What is that? You said, a polyimide?
- 9 A. Polyimide.
- 10 Q. How do you spell that?
- 11 A. P-o-l-y-i-m-i-d-e.
- 12 Q. That was too fast for me. I'm slow.
13 Sorry.
- 14 A. I think it's p-o-l-y-i-m-i-d-e.
- 15 Q. Okay.
- 16 A. I might be wrong, but I'm pretty sure
17 that's the correct spelling.
- 18 Q. You're pronouncing that polyimide?
- 19 A. Polyimide.
- 20 Q. What's that, a chemical term?
- 21 A. It's a --- It's a plastic. It's a polymer.
- 22 Q. Polymer?
- 23 A. Polymer, yes.
- 24 Q. What's a polymer, a plastic?
- 25 A. A plastic.

1 Q. What role, if any, does that play with the
2 switch, Kapton?

3 A. That provides the fluid seal in the
4 switch. It helps --

5 Q. Does that -- I'm sorry. Were you
6 finished?

7 A. I'm saying it provides a fluid seal in the
8 switch and helps transfer the pressure applied to a
9 force to actuate the switch.

10 Q. Okay. On one side of the Kapton is some
11 brake fluid, it's under pressure, it moves the
12 Kapton and activates an electrical switch?

13 A. Essentially, the -- on the other side of
14 the Kapton is what we call a converter which is a --
15 a formed metal part which the Kapton pushes on
16 and -- and that metal pushes on other components
17 that eventually will -- will actuate the switch.
18 There are a number of other components in there.
19 And the Kapton we use in these switches -- in these
20 switches -- these brake pressure switches is teflon
21 coated. It's not just the polyimide film.

22 Q. Kapton that's teflon coated?

23 A. Yes.

24 Q. What does that mean?

25 A. It means that the -- the polyimide layer

1 itself is laminated on both sides by a teflon layer.

2 Q. Okay. So you have some plastic and the
3 glue -- Laminate means glue -- some teflon on --

4 A. Not glue with an epoxy. Laminated pressed
5 together by pressure and temperature to form a -- to
6 form a bond together.

7 Q. Okay. Is the teflon on both sides of the
8 Kapton?

9 A. Yes, it is.

10 Q. Why?

11 A. The -- We use the teflon to both help
12 provide fluid resistance as well as lubricate as
13 this -- as the switch is in contact with the
14 metal -- as the Kapton is in contact with the metal
15 parts to help lubricate that movement; also, by
16 having the teflon on both sides to make sure that in
17 the manufacturing of the switch, the -- the teflon
18 will always be there; there's no issue with loading
19 the Kapton in upside down.

20 Q. Oh, I see.

21 A. Because it's -- it's symmetric on both
22 sides.

23 Q. Okay. So no matter -- When you're
24 manufacturing the switch over there at TI, no matter
25 which way you flip the Kapton seal, both sides are

- 1 the same, so it doesn't --
- 2 A. Yes.
- 3 Q. -- matter --
- 4 A. During the installation ^{is} of the switch.
- 5 Q. And the reason that the -- that the
- 6 electrical side of the Kapton has teflon on it, just
- 7 like the brake fluid side, it's because it's going
- 8 to have some contact with a -- a metal part that it
- 9 has to move against --
- 10 A. Yes.
- 11 Q. -- and teflon's real slippery --
- 12 A. Right.
- 13 Q. -- and this -- and this -- Correct?
- 14 A. Correct.
- 15 Q. -- and this switch is sealed so you don't
- 16 want to have any maintenance needs with this switch
- 17 and that's why it's a good idea to have that side
- 18 teflon coated?
- 19 A. Well, it's teflon coated to make it easier
- 20 to move so there's less friction, because friction
- 21 will affect the calibration of the switch and drift
- 22 through the switch.
- 23 Q. Okay. When I -- When I say that there's
- 24 no maintenance needs, what I mean is, you don't have
- 25 to squirt some oil up in there to keep it.

1 lubricated. You said it keeps it lube --
2 lubricated?

3 A. Yes. There's no maintenance needs.

4 Q. There's no maintenance needs, correct?

5 A. To meet the specifications that were
6 defined to us, that's correct.

7 Q. Okay. What's that mean?

8 A. That we've tested the switch without
9 maintenance to the specifications provided by Ford
10 and the switch met those specifications.

11 Q. All right. So do the owners of any of
12 these cars, are they required to do anything to
13 these switches while they own these vehicles or is
14 there a maintenance need that the owner, like my
15 clients, would be responsible for?

16 A. Not that I'm aware of. But Ford defines
17 the maintenance needs.

18 Q. Can you think of any reason that any of my
19 clients should've done anything to any of these
20 switches while they owned their cars?

21 A. I can't think of any reason at this time.

22 Q. Prior to the recall?

23 A. Yes, prior to recall.

24 Q. And then the reason that the teflon is on
25 the brake fluid side of the switch is because --

1 A. Teflon is a very chemically inert
2 material, so we use that material to make sure we
3 have fluid compatibility to the fluids to help give
4 greater fluid robustness.

5 Q. Do you need a break? I do. Couple of
6 minutes.

7 A. Taking a break is fine with me.

8 Q. Would you like to take one?

9 A. Sure.

10 Q. Okay.

11 THE VIDEOGRAPHER: Going off the
12 record. The time now is the 10:54.

13 (Recess had.)

14 THE VIDEOGRAPHER: We are back on the
15 record. The time now is 11:10.

16 Q. Has anyone at Texas Instruments ever
17 expressed a concern about the potential for a TI
18 pressure switch catching fire because of excessive
19 amperage?

20 A. Based on the tests results we had, showed
21 that if there was excessive current, that that could
22 happen when you add saltwater in the part. So we
23 did express that -- that that potential exists based
24 on the lab the experiments. We expressed that to
25 Ford.

1 Q. Prior to that?

2 A. Prior to that? No.

3 Q. So you're not aware of anyone at Texas
4 Instruments saying anything or writing anything to
5 the effect that a TI pressure switch could possibly
6 catch fire if an amperage was excessive going
7 through the switch prior to these tests that you've
8 been talking about that you photographed on Exhibits
9 3 and 4?

10 A. I'm not aware of any statements like that.

11 J. Texas Instruments -- Is Texas
12 Instruments -- You're here as the corporate
13 representative --

14 A. Yes. I'm not aware of anyone at Texas
15 Instruments -- Sorry -- making statements like that.

16 Q. Let me -- Let me redo that question.
17 At -- On behalf of Texas Instruments as its
18 corporate representative here today, the person
19 who's supposed to be answering the subject matter
20 that we're here talking about, can you say under
21 oath that prior to 1998 in the testing that we've
22 been talking about that's depicted on Exhibits 3 and
23 4, that no one at Texas Instruments said anything or
24 wrote anything down which mentioned a concern that
25 TI pressure switches could catch fire because of

1 excessive amperage?

2 MS. ALVAREZ: Objection, form.

3 A. I'm -- I'm not aware of anyone at Texas
4 Instruments saying that a switch could catch on fire
5 with excessive amperage.

6 Q. Same question, current.

7 MS. ALVAREZ: Objection, form.

8 A. What do you mean, same question, current?

9 Q. Same question, except concerns about
10 amperage, concerns -- concerns about current.

11 MS. ALVAREZ: Objection, form.

12 A. I'm not aware of anyone at Texas
13 Instruments expressing that a switch could catch on
14 fire based excessive current.

15 Q. All right. Same question, except take the
16 word fire out of the question --

17 MS. ALVAREZ: Objection, form.

18 Q. -- anyone at TI prior to 1998 ever mention
19 any concerns about what might possibly happen to a
20 TI pressure switch because of either excessive
21 current or -- and/or excessive amperage?

22 A. I don't know any specifics, but I would
23 imagine, in the development of a car that we need to
24 make sure that the switch can open and close and
25 pass whatever current is needed in the system during

1 that operation and the contacts in the switch would
2 be designed to make sure that the contacts would --
3 would operate in those conditions.

4 Q. Okay. Have you read any memos from any TI
5 engineers that discuss any concerns at all about
6 what might happen to a TI pressure switch if there
7 was excessive current and/or amperage?

8 A. I have not read any memos about that.

9 Q. Prior to 1998?

10 A. Right, prior to 1998.

11 Q. Prior to the development of the Panther
12 pressure switch?

13 A. I have not read any memos. I'm not aware
14 of any.

15 Q. Who is someone named Brennan or Brenner?

16 A. Brennan?

17 Q. Yeah.

18 A. John Brennan?

19 Q. Yeah.

20 A. Is that who you're referring to?

21 Q. Who's that?

22 A. He's a design engineer in the pressure
23 switch group.

24 Q. And what is -- What is his involvement?

25 A. His involvement in what?

1 Q. With the pressure switch.

2 A. Currently he is a design engineer
3 supporting our transmission pressure switches for
4 General Motors.

5 Q. Okay. Are those the same?

6 A. Same as what?

7 Q. As the ones used on the Panther.

8 A. No.

9 Q. What's different?

10 A. They're very different. There's an array
11 of several switches in one package. It's a very
12 flat, low profile package that gets bolted to the
13 transmission.

14 Q. What's similar about it?

15 A. It uses a disk that snaps, uses Kapton in
16 the switch, uses an elastomer seal, opens and closes
17 contacts.

18 Q. So Dr. John Brennan, he's a Medical Doctor
19 or a Ph.D.?

20 A. A Ph.D.

21 Q. In what?

22 A. In -- I don't know all the details, related
23 to the polymers and plastics. I -- I don't remember
24 exactly what his Ph.D. is in.

25 Q. Okay. So then he would probably know

1 about the Kapton, I guess?

2 A. Yes. He's done work before on Kapton.

3 Q. What has he told you about the Kapton that
4 was used on the Panther pressure switch?

5 A. Specific to what aspect of Kapton?

6 Q. Anything.

7 A. He's --

8 Q. Has he said anything negative about the
9 Kapton?

10 A. Negative about the Kapton?

11 Q. Yeah. When I -- When I say, has he said
12 anything, I mean, to you, to anyone else, orally or
13 in writing, has he said anything?

14 A. He's -- He's looked at Kapton and -- and
15 use of Kapton with different automotive fluids, how
16 that Kapton performs, you know, those types of
17 discussions, how the -- how the polyimide is -- is
18 manufactured. He visited DuPont at one point, going
19 back a -- a number of years ago.

20 Q. You talked to him?

21 A. I've talked to him, yes.

22 Q. All right. Have you talked to him, about
23 these pressure switches that are in the Panthers?

24 A. I've talked to him about Kapton.

25 Q. What did he say?

1 A. I talked to him about some of the test
2 work that he did, talked to him about some of the
3 analysis results. I talked to him a little about
4 the polyimide material to understand that material a
5 little better.

6 Q. Okay. Has he told you anything about what
7 he learned when he visited with DuPont?

8 A. He talked about reviewing their process.
9 ~~I do~~ ^{He did not} remember many details of the process. We
10 talked about how -- the fact that they were -- some
11 of the work they had done to make sure they were
12 providing pinhole ~~free~~ ^{free} material.

13 Q. What's that mean?

14 A. That there were no voids in the Kapton, in
15 the film.

16 Q. And that means, I guess, so that brake
17 fluid can't leak across into the electrical
18 components?

19 A. Yes.

20 Q. Is DuPont doing that, providing Kapton --
21 teflon coated Kapton that has no voids?

22 A. I don't remember receiving Kapton from
23 DuPont that had any voids in it.

24 Q. To your knowledge, has any of the Kapton
25 that's been provided to TI by Dupont to make any

1 pressure switches ever had any voids in it that
2 might allow for brake fluid to leak into the
3 electrical side of the switch?

4 A. Not to my knowledge.

5 Q. Okay. Did Dr. Brennan discuss the
6 different types of Kapton that might be used in a
7 pressure switch? Did he discuss that with you?

8 A. We talked about teflon coated versus
9 non-teflon coated Kapton.

10 Q. Anything else?

11 A. Related to?

12 Q. Other than that the -- whether the Kapton
13 should be teflon coated or not teflon coated? Did
14 he mention anything else to you?

15 A. We talked about some of the test results,
16 tests that he had run on Kapton.

17 Q. Did he show you any documents that he'd
18 received from DuPont?

19 A. No, he did not.

20 Q. Are you aware of any documents that
21 Dr. Brennan has received from DuPont?

22 A. I know that people at TI have gotten
23 documents from DuPont that discuss the properties of
24 Kapton. I don't remember specifically off the top
25 of my head any documents specifically directed

1 towards Dr. Brennan.

2 Q. What is it about the Kapton that -- other
3 than the voids that might cause brake fluid to get
4 into the electrical side of the switch?

5 A. If there's a crack in the Kapton.

6 Q. Any other way for that to happen?

7 A. Any other way for there to get a crack in
8 the Kapton?

9 Q. No. Any other way for brake fluid to get
10 from the brake fluid side of the switch to the
11 electrical side of the switch other than a void --
12 Which would be DuPont's responsibility, right?

13 A. Yes.

14 Q. -- or a crack in the Kapton?

15 A. If the -- If the seal is an elastomer
16 seal, the switch as well -- if that seal did not
17 function properly, brake fluid could go by the seal
18 and get to the electric switch components without
19 going through the Kapton.

20 Q. To your knowledge, has that ever occurred?

21 A. Not to my knowledge.

22 Q. To your knowledge, has Texas Instruments
23 ever changed the design of that seal in the subject
24 switch, either the design of the switch or the
25 manner in which it is installed and manufactured in

1 the switch?

2 A. Nothing that I can think of right now.

3 Q. And same question, except the crimping
4 process --

5 MS. ALVAREZ: Objection, form.

6 Q. -- has that been changed?

7 A. Has that been changed when?

8 Q. Ever.

9 A. The initial first switches we produced for
10 Ford, first brake pressure switch we produced for
11 Ford that was on an earlier application, came off of
12 a different crimping printing process. The -- The
13 launch of the 77PSL2-1 came off a manual crimp
14 process and we later changed to an automated crimp
15 process.

16 Q. 77-what?

17 A. PS12-1.

18 Q. 77PSL2-1?

19 A. Yes.

20 Q. What is that?

21 A. That's the TI part number for the switch
22 we provided to Ford for the Panther platform.

23 Q. So that's the switch?

24 A. Yes.

25 Q. What other cars use that switch besides

1 the '92, '93 Panther?

2 A. I don't think any other cars use that
3 switch.

4 Q. What do you mean?

5 A. That I don't -- To the best of my
6 knowledge, no other car is using that switch,
7 77PSL2-1, other than that Panther platform.

8 Q. Okay. Is there some other part number
9 that would designate a switch that was the same when
10 it comes to the Kapton -- type of Kapton and the way
11 that it's sealed, the way that it's crimped?

12 A. There are other switches we produce which
13 are similar in construction, have differences around
14 actuation pressure, connector tabs, things like that
15 that are on other Ford vehicles.

16 Q. Okay. Let's just -- Let's -- Let's limit
17 the similarity on these other switches to the way
18 that it's sealed -- What did you call that seal?

19 A. The Kapton and the elastomer seal.

20 Q. -- the elastomer seal. Okay. So what I
21 want to know about is what TI pressure switches have
22 an elastomer seal, Kap -- teflon coated Kapton and
23 is crimped in the manufacturing process.

24 A. Crimped on the same crimper as the
25 77PSL2-1 or crimped anywhere?

1 Q. Crimped anywhere.

2 A. Okay. All of -- All the brake pressure
3 switches, most of the hydraulic power steering
4 pressure switches, a/c switches all use an elastomer
5 seal, Kapton diaphragms and a crimping process.

6 Q. Okay. What kind of cars use those
7 switches?

8 A. There are many different cars and
9 vehicles, General Motors, Ford, Chrysler, Honda,
10 Nissan, Volvo and others, several OEMs all over the
11 world.

12 Q. Several what?

13 A. Several OEMs, Original Equipment
14 Manufacturers.

15 Q. G.M, Ford, Chrysler, Volvo, Nissan?

16 A. And more.

17 Q. And others?

18 A. And others.

19 Q. That you can't think of right now?

20 A. Right.

21 Q. All right. Of those OEMs that use a Niss
22 (sic.) -- a Texas Instruments pressure switch that
23 uses a elastomer seal, teflon coated Kapton and is
24 crimped in the manufacturing process, which of those
25 switches had -- had -- have ever had problems with

1 brake fluid getting into the electrical components?

2 A. I have only seen two switches that had
3 brake fluid in the electrical components. Those
4 switches were shown to me by Ford.

5 Q. Okay. So that as the Texas Instruments
6 corporate representative, you know of no other TI
7 pressure switch which is designed and manufactured
8 in a similar manner as I've described, sealed with
9 an elastomer seal, teflon coated Kapton, and crimped
10 in the manufacturing process, where it's ever been
11 alleged that there was a leak into the electrical
12 side of the switch?

13 MS. ALVAREZ: Objection, form.

14 Q. Other than the Ford switches?

15 A. There was a -- a couple of switches at
16 Ford. And as I think about it, there were five or
17 six switches that are on Volvo vehicles where Volvo
18 felt that there was brake fluid in the electrical
19 switch area of those switches.

20 Q. Which Volvo vehicles?

21 A. I'm not sure what Volvo vehicle it was.

22 Q. What year did that happen?

23 MS. ALVAREZ: Objection, form.

24 A. What year did what happen?

25 Q. What year did it happen to some Volvo

1 vehicles that you're not familiar with where five or
2 six different types of TI pressure switches
3 allegedly had fluid leaks in the electrical side of
4 the component?

5 A. Not five or six types of switches. Five
6 or six individual switches all of the same type.
7 There are -- For each type -- We ship hundreds of
8 thousands and millions of switches -- there were
9 five or six same type, but individual switches.
10 This occurred early in 1998.

11 Q. Do you know of any other switches prior to
12 that date -- That's about the same date you learned
13 about the Ford stuff, huh?

14 A. It was earlier in the year.

15 Q. So you don't know about anything prior to
16 '98 --

17 MS. ALVAREZ: Objection, form.

18 Q. -- involving TI pressure switches where it
19 was alleged that fluid was getting into the
20 electrical side of the component?

21 MS. ALVAREZ: Objection, form.

22 A. You're asking specifically brake fluid.
23 I'm not aware of any other cases that I can think of
24 right now where there was brake fluid on the
25 electrical side of the switches.

1 Q. All right. Anything else getting in the
2 electrical side of the components, same question,
3 anything else other than brake fluid?

4 A. There have been some -- some reports of
5 leakers of a/c refrigerant.

6 Q. A/C refrigerant?

7 A. Yes.

8 Q. That's what makes air conditioners get the
9 car cold?

10 A. Yes.

11 Q. All right. What cars?

12 A. Ford vehicles.

13 Q. What year?

14 A. I don't know the exact year.

15 Q. Before '98?

16 A. Yes. We -- We ship millions of switches
17 to Ford when they mount the switches on the hose
18 assembly for the a/c switches. They do a helium
19 ^{leak check} ~~recheck~~ and they have found 5 ppm at times or a
20 single digit ppm of switches that are leaking --
21 leak helium during that test.

22 Q. Why were the Volvo switches leaking?

23 MS. ALVAREZ: Objection, form.

24 A. I don't think we ever received those
25 switches back, so I'm not sure.

1 Q. I don't follow you. I thought you said
2 you had looked at five or six switches.

3 A. We heard reports from Volvo about the five
4 or six switches.

5 Q. So what did you see?

6 A. We never saw switches.

7 Q. What did Volvo tell you?

8 A. Well, we were contacted by ITT who makes
9 the brake system there, now called ~~Centitronics~~^{Centi Trucks}
10 (sic.). That division of ITT has been sold to
11 ~~Centitronics~~^{Centi Trucks}. At the time they were ITT. They
12 provide the brake system for Volvo. They contacted
13 us.

14 Q. My question was: What did they tell you?

15 A. They told us that there were reports of
16 five or six switches that had leaked brake fluid.

17 Q. Why did it leak the fluid?

18 A. I don't know.

19 Q. Why did they say it leaked?

20 A. They didn't know.

21 Q. How did they communicate this information
22 to TI?

23 A. I'm not sure. It wasn't communicated
24 directly to me.

25 Q. How did you find out about it?

1 A. One of the engineers in my group told me
2 about it.

3 Q. And what did that eng -- What's that
4 engineer's name?

5 A. ^{Bryan}
~~Brian~~ Dague.

6 Q. Dada?

7 A. Dague, D-a-g-u-e.

8 Q. What did he tell you?

9 A. He told me that ITT had contacted us, that
10 Volvo had ~~sent~~ ^{sent} five pressure switches that leaked,
11 five or six.

12 Q. Did Brian determine why they leaked?

13 A. No, he didn't.

14 Q. Did Brian tell you what he was told about
15 the allegations for why they leaked?

16 A. He told me that they didn't know why they
17 leaked.

18 Q. So someone that -- from ITT or Volvo said
19 they didn't know why the switches leaked?

20 A. They just reported that. That was
21 reports.

22 Q. Did -- Did any of those cars catch fire?

23 A. No, they did not.

24 Q. Do you know of -- of any other cars
25 catching fire allegedly due to the failure, for any

1 reason, of the TI pressure switch other than '92,
2 '93 Panthers?

3 A. There was an investigation at Ford on a
4 power steering pressure switch in 1999 where the
5 pressure switch had burst, releasing power steering
6 fluid on a hot manifold which caught fire. Ford --

7 Q. How many -- I'm sorry. Go ahead.

8 A. Ford's investigation into that along with
9 TI's investigation showed that there was excessive
10 heating in that area. And TI has been cleared by
11 Ford of any -- any issue there.

12 Q. Okay. So in that circumstance, how many
13 vehicles caught on fire?

14 A. One.

15 Q. And it was determined that the switch
16 was --

17 A. Was not the cause of the fire.

18 Q. It was because it was near some --
19 something too hot?

20 A. The -- There were elements in the switch
21 that showed there was excessive heat exposure and
22 Ford found elements in the power steering pump,
23 which the switch is mounted to that, showed that
24 there was excessive heat. I'm not sure what
25 happened in the vehicle to cause that excessive

1 heat.

2 Q. All right. So you know of no
3 circumstances involving any G.M. vehicle where it
4 was alleged that a TI pressure switch had the Kapton
5 seal or the sealing mechanism fail in any respects?

6 A. That's correct.

7 Q. Same question for Chrysler.

8 A. Yeah. I'm not aware of any situation
9 where a Kapton seal failed.

10 Q. Not just you, but Texas Instruments?

11 A. Not that I'm aware of at Texas
12 Instruments.

13 Q. Nissan?

14 A. Not that I'm aware of.

15 Q. So you're not aware of any TI pressure
16 switch failing in any respects with regards to the
17 Kapton seal, the elastomer seal, the teflon,
18 anything having to do with Kapton, or because of any
19 manufacturing defect in a switch involving a Nissan
20 vehicle?

21 A. Not in a vehicle failure, no, I'm not
22 aware of anything.

23 Q. Or what?

24 A. You're talking about a part that was
25 installed on a vehicle. No. No, I'm not aware of

1 any.

2 Q. You're not aware of any communications
3 from G.M., Chrysler or Nissan that discusses the
4 possible failure of the TI pressure switch across
5 the sealing median?

6 A. I'm aware of concerns raised by customers
7 about possible failures, sure.

8 Q. Okay. Like which car company?

9 A. Nissan, for example.

10 Q. All right. What's that about?

11 A. When we were originally engaging with
12 Nissan on the development of a power steering
13 pressure switch, they expressed some concerns about
14 the use of Kapton in a pressure switch.

15 Q. When did that happen?

16 A. It would've been in the early '90s, '93,
17 '94 time frame. I don't remember exactly.

18 Q. How did you learn about that?

19 A. I didn't learn directly. I learned it
20 from talking to other people. I'm not sure exactly
21 how Nissan conveyed that information to us.

22 Q. When did you learn about this from Nissan?

23 A. When did I specifically learn or Texas
24 Instruments?

25 Q. You.

1 A. I probably heard about it during the time
2 frame. I was not working on pressure switches at
3 the time. Yes, I knew other engineers were working
4 on it.

5 Q. Who?

6 A. Other -- Which engineers? Dave Csarn.

7 Q. David --

8 A. Csarn, C-z-a-r-n.

9 And I know John Brennan was involved.

10 Q. What was wrong with those switches?

11 A. There wasn't anything wrong with the
12 switches. We were talking to Nissan about using TI
13 switches and they expressed a concern. It's common
14 for -- for customers, when we present our design, to
15 express what their concerns are about the design and
16 then we'll go through our analysis of why we
17 designed the switch the way we did and what evidence
18 we have to support that the switch performs and
19 ~~we'll~~^{will} meet specifications that they're asking us to
20 meet.

21 Q. And so in the early '90s, what was
22 Nissan's concern about a TI pressure switch that
23 used a teflon coated Kapton?

24 A. They were concerned that the Kapton would
25 wear out and not meet the life requirements.

- 1 Q. . . What were their life requirements?
- 2 A. That pressure switch, I believe, was
3 250,000 cycles.
- 4 Q. Why was Nissan concerned about that?
- 5 MS. ALVAREZ: Objection, form.
- 6 A. Why was Nissan concerned about what?
- 7 Q. About whether the Kapton could handle
8 250,000 cycles on this power steering pressure
9 switch.
- 10 A. They had had poor experience with another
11 supplier that had problems with Kapton.
- 12 Q. Okay. Which supplier was that?
- 13 A. Wako.
- 14 Q. Spell that, please.
- 15 A. W-a-k-o.
- 16 Q. This power steering pressure switch that
17 Nissan was considering purchasing from TI, did it
18 use an alas -- elastomer seal?
- 19 A. Yes.
- 20 Q. Did it use teflon coated teflon?
- 21 A. ~~Yes.~~ No, it used teflon coated Kapton
- 22 Q. Did it use a crimping process in
23 manufacturing?
- 24 A. Actually, I want to go back. I'm not --
25 I'm not positive we used teflon coated Kapton or

1 whether it used Kapton. I'm not positive. Just
2 non-teflon Kapton.

3 Q. Kapton, whether it's teflon coated or not?

4 A. It used Kapton, yes.

5 Q. Crimped in the manufacturing process?

6 A. Yes.

7 Q. What else was similar with this Nissan
8 power steering pressure switch other than these
9 three things --

10 A. The --

11 Q. -- similar to --

12 A. Similar to the TI design, comparing the
13 two TI designs --

14 Q. Yeah.

15 A. -- or comparing the competitive switch?

16 Q. The TI --

17 A. TI design?

18 Q. -- 77PSL2-1.

19 A. To the Nissan power steering --

20 Q. Yeah.

21 A. -- pressure switch? They both used disks
22 to actuate the switch. They both had bases which
23 mated with a custom made connector. They both had
24 hex ports, which is the -- the metal body that is
25 threaded into the -- the customer's port. There may

1 be other things. That's all I can think of right
2 now.

3 Q. Same plastic?

4 A. I don't believe it's the same plastic.

5 Q. Is there an electrical connection?

6 A. Yes. The mating -- The base mates with
7 the mating connector, customer mating connector.

8 Q. Made out of plastic?

9 A. Yes.

10 Q. What's different about that plastic,
11 different color?

12 A. I don't know all the details on that
13 plastic.

14 Q. Plastic connector, right?

15 A. I'm pretty sure there is on -- on that
16 one.

17 Q. Okay.

18 A. It's possible -- There's one Nissan part,
19 I think, that uses just a -- a -- a metal post, used
20 a hex port for grounding. It's possible this one
21 includes that. I don't remember exactly on that
22 product.

23 Q. Okay. So this was before all -- all of
24 these alleged '92, '93 Panther fires --

25 A. Yes.

1 Q. -- isn't it?

2 A. Yes.

3 Q. Years before?

4 A. Yes.

5 Q. So what did TI learn from Nissan's
6 concerns?

7 A. We learned that the Wako pressure switch
8 had a much higher stress condition in the Kapton,
9 that they -- their switch did not cycle as many
10 pressure cycle life as the Texas Instruments switch.
11 And we learned that the Texas ~~Instrument~~^{Instruments} switch did
12 meet Nissan's specification and we were able to
13 convince Nissan that our product would work fine in
14 their application.

15 Q. What kind of Kapton was used for that
16 Nissan power steering pressure switch?

17 A. The TI one or the Wako one?

18 Q. TI one.

19 A. I don't remember if it's straight Kapton
20 or teflon coated Kapton.

21 Q. Does it have a serial number or a
22 designation number or something?

23 A. For the Kapton itself?

24 Q. Yeah.

25 A. It would be different, depending on

1 whether it was the teflon coated or the -- or the
2 non-teflon coated. I'm not sure.

3 Q. All right. Which did -- Did DuPont get
4 involved in which one to use for the Nissan?

5 A. We had DuPont review -- look at Kapton
6 that had been in -- exposed to power steering fluid
7 in the field previously and -- and analyze the
8 Kapton to see if they saw degradation of that
9 Kapton.

10 Q. Did they?

11 A. They analyzed it, yes.

12 Q. Did they see degradation?

13 A. A very little degradation.

14 Q. So who told you that, Du -- DuPont?

15 A. They wrote a report on it.

16 Q. Has that been produced?

17 A. It's in the -- There's -- There's a lot of
18 documents we're still collecting to produce and I
19 think it's in the -- the package that's -- that's
20 being collecting.

21 Q. Okay. So it probably hasn't been produced
22 then, I guess?

23 A. I don't know exactly where we are in that,
24 but I know it's a document that's been found and
25 being collected.

1 Q. I mean, you weren't involved in this
2 initially back in the early '90s, were you?

3 A. No. No, not at all.

4 Q. The reason -- The reason that you learned
5 about this is because it was something that might be
6 relevant to the subject matter of this deposition
7 and so you reviewed those documents?

8 A. I tried to get some information to better
9 answer your questions, yes.

10 Q. Okay. So you reviewed some documents that
11 Nissan wrote and you reviewed some documents that
12 DuPont wrote?

13 A. I didn't see any documents that Nissan
14 wrote.

15 Q. You're not saying there aren't any, you
16 just haven't seen any?

17 A. That's correct.

18 Q. You saw some documents DuPont wrote?

19 A. Yes.

20 Q. How many?

21 A. One or two.

22 Q. That's it, you've looked at one to two
23 documents involving this Nissan power steering
24 switch or were there some TI documents?

25 A. There were some TI documents as well.

1 Q. How many of those?

2 A. I don't remember exactly, but there was
3 pressure cycling data, test reports. There may have
4 been some other things.

5 Q. Okay. The Wak -- The Wako switch --

6 A. Yes.

7 Q. -- y'all did some tests on that --

8 A. Yes.

9 Q. -- for this -- for the power steering
10 pressure switch that Nissan had been using made by
11 Wako?

12 A. Yes.

13 Q. What did y'all find out about that switch?

14 A. Well, first, the -- that switch was being
15 used by Nissan on -- in a brakes -- in a brake
16 application and a power steering application.

17 Q. Kind of like the one we're talking about?

18 A. I don't know the details of the
19 application.

20 Q. Okay. What did you find out about that
21 switch --

22 A. The --

23 Q. -- testing of the Wako switch?

24 A. The Kapton had a higher stress condition
25 than the TI switch and they were -- they were only

1 using one layer of Kapton.

2 Q. Okay. What did -- What happened with one
3 layer of Kapton in the Wako brake pressure switch?

4 A. It had lower cycle life than the TI
5 switch.

6 Q. Which was what, 250,000 cycles?

7 A. Well, the TI -- the TI switch survived
8 more than 250,000 cycles.

9 Q. How many did the Wako handle?

10 A. I don't remember.

11 Q. It wasn't sufficient for Nissan's
12 specifications, I take it?

13 A. I don't know the details of Nissan's
14 concerns or what the issues were with that switch.

15 Q. Okay. So did the TI get the -- get the
16 contract to provide the power steering pressure
17 switch for these Nissans?

18 A. Yes, TI did.

19 Q. So what type of switch did TI provide?

20 A. A pressure switch.

21 Q. What's the number for it?

22 A. I don't know off the top of my head.

23 Q. What type of Kapton does it use?

24 A. I'm not positive. I think it's straight
25 Kapton. I don't believe it's teflon coated, but I'm

1 really not a hundred percent sure.

2 Q. Do you know if it's the 500FN131 Kapton?

3 A. That Kapton is teflon coated. 500FN -- FN
4 means its teflon coated. So if it's not teflon
5 coated, it wouldn't be that part number.

6 Q. Okay. Is that the same type of Kapton
7 that's used in the Panther?

8 A. The polyimide is the same type. Again, I
9 don't remember if -- whether it was teflon coated or
10 not.

11 Q. Okay. So that designation number,
12 500FN -- Capitals?

13 A. Yes.

14 Q. -- 131, that's a number that DuPont
15 authors?

16 A. That's DuPont's number, yes.

17 Q. What do the numbers mean?

18 A. My understanding is the 500 means it's
19 five-thousandths of an inch thick, total thickness.
20 The FN means it's teflon coated Kapton. The 131
21 means it's one-thousandths of an inch thick of
22 teflon laminated to three-thousandths of an inch
23 thick of polyimide laminated to one-thousandths of
24 an inch thick of teflon.

25 Q. Okay. So the 2 -- the 1 in the 131,

1 both -- both those mean what, one-thousandths of an
2 inch?

3 A. One-thousandths of an inch thick of
4 teflon, three-thousandths of an inch thick of the
5 polyimide layer and then one-thousandths of an inch
6 thick of teflon, those three layers laminated
7 together.

8 Q. Did I write that down right (Indicating)?

9 A. The -- The FN is teflon coated Kapton, not
10 just teflon. This is -- These (Indicating) are all
11 of an inch. This is DuPont's part number. That's
12 my understanding of what that number means.

13 (Exhibit No. 5 marked.)

14 Q. Okay. So Exhibit 5 shows DuPont's part
15 number and what your understanding of what that part
16 number means?

17 A. Yes, that's correct.

18 Q. All right. Now, who recommended this type
19 of Kapton for the Panther switches?

20 MS. ALVAREZ: Objection, form.

21 A. TI made the decision of what type of
22 Kapton to use in those switches and that design was
23 approved by Ford.

24 Q. So TI and Ford approved of the Kapton
25 that's identified on Exhibit 5 for the use in the

1 '92, '93 Panther pressure switches that we're here
2 talking about?

3 A. Yes. TI selected it and Ford approved it.

4 Q. That wasn't DuPont's decision?

5 A. Not that --

6 Q. They just --

7 A. -- I'm aware of.

8 Q. So DuPont basically tells TI and Ford or
9 informs TI and Ford what type of Kapton is
10 available, what the part number is and what those
11 different designations mean and what the
12 specifications are and then sells the Kapton to TI
13 or Ford if they choose to buy it?

14 A. Basically, that's correct. DuPont defines
15 what the properties are in the Kapton and then
16 certifies that the Kapton will meet certain
17 specifications.

18 Q. Okay. For the -- the '92, '93 Panther,
19 did DuPont ever recommend anything other than the
20 Kapton identified on Exhibit 5?

21 A. Not that I'm aware of.

22 Q. For any of the switches for the Fords --
23 other than the '92, '93 Panther -- G.M., Chrysler,
24 Volvo, Nissan or other cars for the switches that
25 we've been talking about that use the same type of

1 manufacturing process --

2 A. The couple that we've been talking
3 about --

4 Q. -- has DuPont ever recommended a different
5 type of Kapton other than what TI was using or
6 testing?

7 A. Not that I'm aware of.

8 Q. Has DuPont ever recommended anything to
9 these car companies that I just listed for Kapton to
10 be used on any TI pressure switch other than the
11 Kapton identified on Exhibit 5?

12 A. Can you repeat that question for me?

13 Q. Has DuPont ever informed TI or any car
14 company that some other type of Kapton ought to be
15 used other than the Kapton that TI might be
16 considering for a pressure switch?

17 MS. ALVAREZ: Objection, form.

18 A. I'm not aware of DuPont making any
19 recommendations to any use -- other uses of Kapton
20 or other Kaptons to be used to anyone at TI or car
21 companies.

22 Q. Other -- Whether the switch is in the
23 development stage, design stage or after it's been
24 designed and is being produced, at any of those
25 stages, has DuPont ever recommended a different type

1 of Kapton for any TI pressure switch?

2 A. Not that I'm aware of and can think
3 about -- think of at this time.

4 Q. Has Texas Instruments ever changed the
5 design of any pressure switch at any point in time
6 from the point of the initial design phase until the
7 switches are actually being produced and sold to a
8 car company where TI has considered using a
9 different type of Kapton in that -- in a pressure
10 switch?

11 A. I'm sure there are examples where TI's
12 considered teflon coated versus non-teflon coated
13 Kapton in -- in different applications.

14 Q. Which ones?

15 A. I don't know. I don't know the details
16 around that, not familiar with all their -- all
17 the -- every switch development program by TI.

18 Q. What's the DuPont part number for Kapton
19 that's not teflon coated?

20 A. It has an HN rather than an FN part
21 number. And the rest, I assume, would follow suit.
22 So, for example, if you just had non-teflon coated
23 and it was three mils thick, I assume it would be
24 300HN030.

25 Q. Have you ever seen any documents over at

1 Texas Instruments that discusses that type of Kapton
2 for use or potential use or present use in any TI
3 pressure switch?

4 A. I've seen documents from DuPont that
5 describe their literature and I know that TI uses
6 non-teflon coated Kapton in some of our pressure
7 switches.

8 Q. Which ones?

9 A. I know the transmission pressure switches
10 did not use a teflon coating.

11 Q. Why not?

12 A. The teflon coating is not needed in that
13 environment.

14 Q. Okay. Brake fluid is different than
15 transmission fluid?

16 A. Yes, brake fluid is different.

17 Q. How so? Why -- Why is -- Let's do it this
18 way: Why is the teflon needed for Kapton exposed to
19 brake fluid, but not for Kapton exposed to automatic
20 transmission fluid?

21 A. There's a number of differences between
22 those switch designs, the lubrication required, as I
23 talked about before, the teflon to the metal
24 components is different in those designs. That
25 lubrication isn't needed in the transmission parts.

1 And also, in the brake fluid -- you ^{can} ~~can't~~ have water
2 mixable in the brake fluid, which the teflon can
3 provide a protective barrier against that water
4 mixed in the brake fluid.

5 Q. Okay. Brake fluid tends to absorb
6 moisture?

7 A. Yes.

8 Q. Water?

9 A. Yes.

10 Q. And water is corrosive to Kapton or
11 detrimental?

12 A. Water can, under the right circumstances,
13 degrade the strength of Kapton.

14 Q. And so, if -- if during the manufacturing
15 process of the Panther switches the teflon is
16 damaged, could that cause the brake fluid to harm
17 the Kapton seal?

18 A. I don't know. That's -- That's
19 speculation.

20 Q. You've never heard anybody mentioning that
21 perhaps these Panther switches, during the
22 manufacturing process, the crimping process in
23 particular, that the Kapton seal was damaged in some
24 way?

25 A. There are discussions around that that --

1 from -- from Ford, questions around the crimping
2 process and is the Kapton still damaged, yes.

3 Q. Is that true?

4 A. Is what true?

5 Q. That it is damaged in the crimping
6 process.

7 A. No, the Kapton seal's not damaged in the
8 crimping process.

9 Q. So to your knowledge, if anyone accuses TI
10 of damaging the Kapton seal in the manufacturing
11 process, that wouldn't be true?

12 A. That's correct.

13 Q. Did you know that Ford has accused TI of
14 that in it's recent pleading that we marked Exhibit
15 1?

16 A. Yes.

17 Q. Did you learn that during one of the
18 breaks or during our -- our break?

19 A. You showed me that this morning.

20 MR. MANSKE: Norm, for the record,
21 can we just identify in which case that particular
22 document is pending in? I just haven't seen that
23 particular one yet, the style of the case.

24 Q. Well, I just read what you read and it
25 doesn't say anything about crimping. Do you want to

1 read it again? It just says, the manufacturing
2 defect caused by TI in assembly. When did you learn
3 about crimping?

4 A. You're right. I misspoke. I don't -- I
5 don't know that they alleged it was due to crimping.
6 You're correct.

7 Q. When did you learn about it?

8 A. Learn about what?

9 Q. That Ford was claiming that these switches
10 had damaged the Kapton seal during the manufacturing
11 process because of crimping.

12 A. Ford expressed those concerns to us in the
13 March, April, 1999 time frame.

14 Q. Were all of my clients' cars that you've
15 inspected, were all of those switches manufactured
16 by TI, all the pressure switches?

17 A. I would expect that they would be. One
18 vehicle did not have a pressure switch, so --

19 Q. Right.

20 A. -- there was none on that vehicle.

21 Q. Would --

22 A. Looking at the other switches, they looked
23 like TI pressure switches.

24 Q. Okay. Designed by TI?

25 A. Designed by TI and approved by Ford.

1 Q. Manufactured by TI?

2 A. Yes.

3 Q. And those switches had Kapton seals,
4 right?

5 A. Yes.

6 Q. They were crimped in the manufacturing
7 process by TI, correct?

8 A. Yes.

9 Q. They had an elastomer seal, correct?

10 A. Yes.

11 Q. And it's your testimony that none of those
12 switches were damaged during the manufacturing
13 process and specifically during the crimping stage?

14 A. Yes.

15 Q. And how do you know that?

16 A. Because in the design of the switch, then
17 subsequent testing of the switch to prove that the
18 switches met the expected performance parameters of
19 the switch and then during subsequent testing and
20 production where we take samples of switches and
21 exercise and test those switches, all switches met
22 specification.

23 Q. Ford did some testing too, didn't --
24 didn't it?

25 A. What type of testing? I'm not sure what