EA02-025

FORD 10/27/03

APPENDIX N

BOOK 32 OF 61

PART 4 OF 6

NO. C-4178-98-F

PAULINE G. GONZALEZ AND JOSE NOE GONZALEZ, SR.	)	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:

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HOUSTON, TEXAS 77002
BAR NO. 10856920

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

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

STEVEN BERINGHAUSE,

having been first duly sworn, testified as follows:

E X A M I N A T I O N

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

A. My name is Steve Beringhause.

Q. Tell us about yourself.

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

Q. That's it?

A. Anything else?

Q. College?

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

Q. Why are you here?

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

Q. For who?

A. For Texas Instruments.

Q. What does that mean to you?

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

Q. What does that mean, just your understanding?

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

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

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

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

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

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

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

MS. ALVAREZ: Yes.

MR. JOLLY: Okay.

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

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

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

A. Yes.

Q. Given a depo before?

A. No, I have not.

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

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

Q. How many days?

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

Q. How much?

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

Q. Range?

A. Few days.

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

A. Six-hour, eight-hour days.

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

A. Somewhere around there.

Q. Okay. What did you do?

A. In preparation?

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

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

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

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

Q. When?

MS. ALVAREZ: Objection, form.

Q. When did you review these tests and data?

A. Over the past few weeks.

Q. Where?

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

Q. What tests?

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

Q. Tests on what?

A. Tests on the pressure switch.

Q. Is that what you're calling it?

A. Calling what, the --

Q. The switch.

A. The -- Yes, pressure switch.

Q. The pressure switch?

A. Yes.

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

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

Q. May I have that, please?

A. Sure.

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

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

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

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

Q. Andy who?

A. Andy McGuirk.

Q. McGuirk?

A. Yes.

Q. Spell that name.

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

Q. He's with Ford?

A. No. He's with Texas Instruments.

Q. What does he do over there?

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

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

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

(Exhibit No. 2 marked.)

A. To Fred Porter.

Q. Who is that?

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

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

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

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

(Exhibit No. 1 marked.)

A. I have not seen this document before.

Q. Okay. Well, turn the page.

A. (Witness complies.)

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

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

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

Q. Okay. Is that true?

A. That is not true.

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

MS. ALVAREZ: Objection, form.

A. Why what is not true?

Q. Why what you just read is not true.

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

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

MS. ALVAREZ: Objection, form.

A. I don't know of any problem with arcing, don't know that pressure switches have caused any vehicle fires, don't know of any manufacturing defects caused my Texas Instruments in such

switches.

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

A. That's correct.

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

A. I've looked at five vehicles.

Q. Whose vehicle?

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

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

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

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

A. I knew that Russ Bowman looked at the Payne vehicle. And I'm not aware of any other vehicles that -- Well, actually, can -- can you reask that question? I'm not sure if I fully answered your question good.

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

A. Yes.

Q. There are other Panthers that have caught

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

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

Q. Allegedly?

A. Allegedly.

Q. How many have allegedly caught fire?

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

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

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

Q. Who is that lawyer?

A. I think the firm is Scruggs' firm.

Q. How much time did you spend looking at Pauline Gonzalez's car?

A. I don't remember the exact time.

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

A. Yes, it was.

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

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

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

A. Yes, there was.

Q. I was told that the inspection that you conducted on the Gonzales vehicle did not exceed 15 minutes. Would that be correct?

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

Q. Okay. Twenty minutes to thirty minutes inspecting Pauline Gonzalez's car?

A. Somewhere around that amount of time.

Q. And in that 20 to 30 minutes you concluded that the TI pressure switch did not cause Pauline's car to catch fire?

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

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

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

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

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

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

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

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

Q. Did Pauline Gonzalez's car have the TI pressure switch on it that is the subject of the recall?

MS. ALVAREZ: Objection, form.

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

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

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

pressure switch was originally on that vehicle or not.

Q. That's not my question.

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

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

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

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

A. I'm not sure.

Q. What's going on with this recall?

MS. ALVAREZ: Objection, form.

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

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

A. What is TI going to do about what?

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

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

Q. Ford has not asked TI to pay for the

recall?

A. Not that I'm aware of.

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

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

Q. What's that mean?

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

Q. And that means pay for it?

A. Yes.

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

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

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

MS. ALVAREZ: Objection, form.

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

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

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

and test the switch to that specification.

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

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

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

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

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

MS. ALVAREZ: Objection, form.

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

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

MS. ALVAREZ: Objection, form.

A. Ford has the system expertise and system

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

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

A. No.

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

A. Not without power being applied --

Q. Okay.

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

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

MS. ALVAREZ: Objection, form.

Q. Yes?

A. I imagine it's possible in the -- in the right situation and the right circumstances. I don't -- I don't know any specific --

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

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

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

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

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

MS. ALVAREZ: Objection --

Q. -- agreed?

MS. ALVAREZ: -- form.

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

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

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

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

MS. ALVAREZ: Objection, form.

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

Q. You don't have a full system understanding

of the pressure switch we're here talking about?

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

Q. Okay.

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

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

A. I do know that now.

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

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

MR. JOLLY: Objection, nonresponsive.

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

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

MS. ALVAREZ: Objection, form.

MR. MANSKE: Join --

Q. -- with the ignition off?

MR. MANSKE: Ford joins in the objection.

A. Can -- Can you repeat the question?

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

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

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

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

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

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

A. Did TI --

MS. ALVAREZ: Objection, form.

A. Did TI know what?

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

A. TI did not know that.

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

A. Late in 1998.

Q. How did that come about?

A. When Ford talked to us about the investigation they were doing on underhood fires on the Town Car and they talked about the -- the switch being potentially where the fire was starting, they -- we reviewed with them the electrical diagrams around how the switch was powered.

Q. Who's "we"?

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

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

Instruments?

A. Myself and other engineers in a group. It's a list of people.

Q. Who?

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

Q. Yeah.

A. Brian Dague was involved, Andy MaGuirk was involved. Those are the only people I think of right now.

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

MS. ALVAREZ: Objection, form.

A. Can you repeat the question?

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

MS. ALVAREZ: Objection, form.

Q. -- with the ignition off?

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

Q. Why?

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

be powered continuously.

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

A. We asked why it was powered continuously.

Q. What did the folks at Ford say?

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

Q. Why does it need to be powered continuously?

A. I don't know.

Q. Who at Ford said that it did?

A. I don't remember exactly who.

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

A. I don't remember.

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

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

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

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

Q. How many meetings have there been between

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

A. Including phone conversations?

Q. Yes.

A. I'm not sure of the exact number. Tens of meetings.

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

A. Where --

Q. -- meetings with Ford?

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

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

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

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

(Exhibits 3 and 4 marked.)

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

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

Q. What testing?

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

Q. Did it?

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

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

MS. ALVAREZ: Objection, form.

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

MR. JOLLY: Objection, nonresponsive.

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

A. In certain --

MS. ALVAREZ: Objection, form.

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

Q. All right. So can you say that TI

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

MS. ALVAREZ: Objection, form.

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

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

A. That's correct.

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

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

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

A. Yes.

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

A. Looks like five switches.

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

A. It looks like two.

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

A. (Witness nods head.)

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

MS. ALVAREZ: Objection, form.

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

MR. JOLLY: Objection, nonresponsive.

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

MS. ALVAREZ: Objection, form.

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

MR. JOLLY: Objection, nonresponsive.

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

MS. ALVAREZ: Objection, form.

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

Q. Well, what do you think that means?

A. I'm not sure.

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

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

Q. Okay.

MR. JOLLY: Objection, nonresponsive.

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

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

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

opposed to two out of five?

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

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

MS. ALVAREZ: Objection, form.

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

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

MS. ALVAREZ: Objection, form.

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

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

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

MS. ALVAREZ: Objection, form.

A. I'm not sure what you mean.

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

A. Well, good --

Q. -- or bad?

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

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

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

MR. JOLLY: Objection, nonresponsive.

Q. Did the switch need some improvements?

A. The switch met all specifications.

MR. JOLLY: Objection, nonresponsive.

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

MS. ALVAREZ: Objection, form.

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

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

MS. ALVAREZ: Objection, form.

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

Q. All right. Summarize yourself correctly then.

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

Q. Okay.

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

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

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

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

A. Ford.

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

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

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

A. Ford.

Q. Did you mention this to Ford?

A. Yes, we did.

Q. Who mentioned it to Ford?

A. I mentioned it to Ford.

Q. Who did you mention it to?

A. Fred Porter.

Q. What did you say?

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

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

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

simulate the battery and grounding the hex port of the device, by injecting saltwater provides a conductive path from the terminals of the switch, that connective 14 volts, to the grounded hex port and the current flows through the saltwater, corroding the contact elements inside the switch.

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

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

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

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

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

A. The volts and the allowable amps.

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

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

A. Yeah. Roughly, yes.

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

MS. ALVAREZ: Objection --

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

A. No.

MS. ALVAREZ: Objection, form.

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

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

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

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

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

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

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

Q. All right.

A. They install those components in the vehicle.

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

A. Which information?

Q. The amperage.

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

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

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

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

amperage was --

MS. ALVAREZ: Objection --

Q. -- in late 1998 --

MS. ALVAREZ: Objection, form.

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

MS. ALVAREZ: Objection, form.

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

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

A. We did not --

MS. ALVAREZ: Objection, form.

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

Q. Okay. So you were surprised?

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

Q. So you were surprised?

MS. ALVAREZ: Objection, form.

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

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

than what TI had anticipated?

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

Q. Who at Ford provided that information?

A. Fred Porter.

Q. Anyone else?

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

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

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

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

A. What?

Q. Was the amperage changed?

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

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

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

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

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

A. Yes.

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

MS. ALVAREZ: Objection, form.

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

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

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

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

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

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

Q. What is the amperage rating of this switch?

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

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

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

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

A. It's a 14-volt switch.

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

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

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

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

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

A. I'm not sure.

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

A. I don't know any.

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

MS. ALVAREZ: Objection, form.

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

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

A. I know --

Q. -- in a Panther fuse block?

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

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

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

MS. ALVAREZ: Objection, form.

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

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

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

Q. Are there any --

A. -- as far as maximum current.

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

A. Nothing that I'm aware of now.

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

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

A. Based on --

Q. Any --

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

Q. That's not good; is it?

A. I don't know.

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

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

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

A. No. I said --

MS. ALVAREZ: Objection --

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

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

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

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

Q. To --

A. -- lower than that.

Q. To what?

A. Roughly, around half an amp.

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

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

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

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

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

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

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

A. Yes.

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

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

Q. Okay. Has that been changed?

MS. ALVAREZ: Objection, form.

A. Has what been changed?

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

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

Q. What is amperage?

A. Amperage is the amount of current that flows.

Q. All right. What's that mean?

A. What does it mean?

Q. Yeah.

A. Essentially, the number of electrons flowing through the wire over a certain amount of the time or a number -- amount of charge flowing through electrons over a certain amount of time.

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

Q. So is that a yes?

A. Potentially, yes.

Q. All right. What else?

MS. ALVAREZ: Objection, form.

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

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

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

A. Yes.

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

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

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

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

Q. Ford and Ford alone?

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

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

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

A. No, I'm not saying that.

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

A. Yes.

Q. Anything else --

MS. ALVAREZ: Objection, form.

Q. -- that --

A. What --

Q. -- was recommended?

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

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

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

Q. All right. Tell us about the Kapton.

A. What specifically --

MS. ALVAREZ: Objection, form.

A. -- about Kapton?

Q. Do you know about it?

A. About what about Kapton?

Q. Do you know anything about it?

A. I know some things about Kapton, yes.
Q. Okay. What do you know about it?
A. I know we use Kapton in our pressure switches at TI.
Q. What is it?
A. Kapton is a polyimide. It's a polyimide film that we buy from DuPont.
Q. What is that? You said, a polyimide?
A. Polyimide.
Q. How do you spell that?
A. P-o-l-y-i-m-i-d-e.
Q. That was too fast for me. I'm slow. Sorry.
A. I think it's p-o-l-y-i-m-i-d-e.
Q. Okay.
A. I might be wrong, but I'm pretty sure that's the correct spelling.
Q. You're pronouncing that polyimide?
A. Polyimide.
Q. What's that, a chemical term?
A. It's a -- It's a plastic. It's a polymer.
Q. Polymer?
A. Polymer, yes.
Q. What's a polymer, a plastic?
A. A plastic.

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

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

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

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

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

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

Q. Kapton that's teflon coated?

A. Yes.

Q. What does that mean?

A. It means that the -- the polyimide layer

itself is laminated on both sides by a teflon layer.

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

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

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

A. Yes, it is.

Q. Why?

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

Q. Oh, I see.

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

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

the same, so it doesn't --

A. Yes.

Q. -- matter --

A. During the installation of the switch.

Q. And the reason that the -- that the electrical side of the Kapton has teflon on it, just like the brake fluid side, it's because it's going to have some contact with a -- a metal part that it has to move against --

A. Yes.

Q. -- and teflon's real slippery --

A. Right.

Q. -- and this -- and this -- Correct?

A. Correct.

Q. -- and this switch is sealed so you don't want to have any maintenance needs with this switch and that's why it's a good idea to have that side teflon coated?

A. Well, it's teflon coated to make it easier to move so there's less friction, because friction will affect the calibration of the switch and drift through the switch.

Q. Okay. When I -- When I say that there's no maintenance needs, what I mean is, you don't have to squirt some oil up in there to keep it

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

A. Yes. There's no maintenance needs.

Q. There's no maintenance needs, correct?

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

Q. Okay. What's that mean?

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

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

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

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

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

Q. Prior to the recall?

A. Yes, prior to recall.

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

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

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

A. Taking a break is fine with me.

Q. Would you like to take one?

A. Sure.

Q. Okay.

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

(Recess had.)

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

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

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

Q. Prior to that?

A. Prior to that? No.

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

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

Q. Texas Instruments -- Is Texas Instruments -- You're here as the corporate representative --

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

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

excessive amperage?

MS. ALVAREZ: Objection, form.

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

Q. Same question, current.

MS. ALVAREZ: Objection, form.

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

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

MS. ALVAREZ: Objection, form.

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

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

MS. ALVAREZ: Objection, form.

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

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

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

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

A. I have not read any memos about that.

Q. Prior to 1998?

A. Right, prior to 1998.

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

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

Q. Who is someone named Brennan or Brenner?

A. Brennan?

Q. Yeah.

A. John Brennan?

Q. Yeah.

A. Is that who you're referring to?

Q. Who's that?

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

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

A. His involvement in what?

Q. With the pressure switch.

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

Q. Okay. Are those the same?

A. Same as what?

Q. As the ones used on the Panther.

A. No.

Q. What's different?

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

Q. What's similar about it?

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

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

A. A Ph.D.

Q. In what?

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

Q. Okay. So then he would probably know

about the Kapton, I guess?

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

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

A. Specific to what aspect of Kapton?

Q. Anything.

A. He's --

Q. Has he said anything negative about the Kapton?

A. Negative about the Kapton?

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

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

Q. You talked to him?

A. I've talked to him, yes.

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

A. I've talked to him about Kapton.

Q. What did he say?

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

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

A. He talked about reviewing their process. I do remember many details of the process. We talked about how -- the fact that they were -- some of the work they had done to make sure they were providing pinhole freed material.

Q. What's that mean?

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

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

A. Yes.

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

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

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

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

A. Not to my knowledge.

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

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

Q. Anything else?

A. Related to?

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

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

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

A. No, he did not.

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

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

towards Dr. Brennan.

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

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

Q. Any other way for that to happen?

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

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

A. Yes.

Q. -- or a crack in the Kapton?

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

Q. To your knowledge, has that ever occurred?

A. Not to my knowledge.

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

the switch?

A. Nothing that I can think of right now.

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

MS. ALVAREZ: Objection, form.

Q. -- has that been changed?

A. Has that been changed when?

Q. Ever.

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

Q. 77-what?

A. PSl2-1.

Q. 77PSL2-1?

A. Yes.

Q. What is that?

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

Q. So that's the switch?

A. Yes.

Q. What other cars use that switch besides

the '92, '93 Panther?

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

Q. What do you mean?

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

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

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

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

A. The Kapton and the elastomer seal.

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

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

Q. Crimped anywhere.

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

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

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

Q. Several what?

A. Several OEMs, Original Equipment Manufacturers.

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

A. And more.

Q. And others?

A. And others.

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

A. Right.

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

brake fluid getting into the electrical components?

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

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

MS. ALVAREZ: Objection, form.

Q. Other than the Ford switches?

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

Q. Which Volvo vehicles?

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

Q. What year did that happen?

MS. ALVAREZ: Objection, form.

A. What year did what happen?

Q. What year did it happen to some Volvo

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

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

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

A. It was earlier in the year.

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

MS. ALVAREZ: Objection, form.

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

MS. ALVAREZ: Objection, form.

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

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

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

Q. A/C refrigerant?

A. Yes.

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

A. Yes.

Q. All right. What cars?

A. Ford vehicles.

Q. What year?

A. I don't know the exact year.

Q. Before '98?

A. Yes. We -- We ship millions of switches to Ford when they mount the switches on the hose assembly for the a/c switches. They do a helium recheck and they have found 5 ppm at times or a single digit ppm of switches that are leaking -- leak helium during that test.

Q. Why were the Volvo switches leaking?

MS. ALVAREZ: Objection, form.

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

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

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

Q. So what did you see?

A. We never saw switches.

Q. What did Volvo tell you?

A. Well, we were contacted by ITT who makes the brake system there, now called Conitevits (sic.). That division of ITT has been sold to Conitevits. At the time they were ITT. They provide the brake system for Volvo. They contacted us.

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

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

Q. Why did it leak the fluid?

A. I don't know.

Q. Why did they say it leaked?

A. They didn't know.

Q. How did they communicate this information to TI?

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

Q. How did you find out about it?

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

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

A. Brian Dague.

Q. Dade?

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

Q. What did he tell you?

A. He told me that ITT had contacted us, that Volvo had sent five pressure switches that leaked, five or six.

Q. Did Brian determine why they leaked?

A. No, he didn't.

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

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

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

A. They just reported that. That was reports.

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

A. No, they did not.

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

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

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

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

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

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

A. One.

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

A. Was not the cause of the fire.

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

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

heat.

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

A. That's correct.

Q. Same question for Chrysler.

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

Q. Not just you, but Texas Instruments?

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

Q. Nissan?

A. Not that I'm aware of.

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

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

Q. Or what?

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

any.

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

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

Q. Okay. Like which car company?

A. Nissan, for example.

Q. All right. What's that about?

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

Q. When did that happen?

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

Q. How did you learn about that?

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

Q. When did you learn about this from Nissan?

A. When did I specifically learn or Texas Instruments?

Q. You.

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

Q. Who?

A. Other -- Which engineers? Dave Czarn.

Q. David --

A. Czarn, C-z-a-r-n.

And I know John Brennan was involved.

Q. What was wrong with those switches?

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

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

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

Q. What were their life requirements?
A. That pressure switch, I believe, was 250,000 cycles.
Q. Why was Nissan concerned about that?
MS. ALVAREZ: Objection, form.
A. Why was Nissan concerned about what?
Q. About whether the Kapton could handle 250,000 cycles on this power steering pressure switch.
A. They had had poor experience with another supplier that had problems with Kapton.
Q. Okay. Which supplier was that?
A. Wako.
Q. Spell that, please.
A. W-a-k-o.
Q. This power steering pressure switch that Nissan was considering purchasing from TI, did it use an elas -- elastomer seal?
A. Yes.
Q. Did it use teflon coated teflon?
A. Yes.
Q. Did it use a crimping process in manufacturing?
A. Actually, I want to go back. I'm not -- I'm not positive we used teflon coated Kapton or

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

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

A. It used Kapton, yes.

Q. Crimped in the manufacturing process?

A. Yes.

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

A. The --

Q. -- similar to --

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

Q. Yeah.

A. -- or comparing the competitive switch?

Q. The TI --

A. TI design?

Q. -- 77PSL2-1.

A. To the Nissan power steering --

Q. Yeah.

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

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

Q. Same plastic?

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

Q. Is there an electrical connection?

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

Q. Made out of plastic?

A. Yes.

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

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

Q. Plastic connector, right?

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

Q. Okay.

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

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

A. Yes.

Q. -- isn't it?
A. Yes.
Q. Years before?
A. Yes.
Q. So what did TI learn from Nissan's concerns?
A. We learned that the Wako pressure switch had a much higher stress condition in the Kapton, that they -- their switch did not cycle as many pressure cycle life as the Texas Instruments switch. And we learned that the Texas treatment switch did meet Nissan's specification and we were able to convince Nissan that our product would work fine in their application.
Q. What kind of Kapton was used for that Nissan power steering pressure switch?
A. The TI one or the Wako one?
Q. TI one.
A. I don't remember if it's straight Kapton or teflon coated Kapton.
Q. Does it have a serial number or a designation number or something?
A. For the Kapton itself?
Q. Yeah.
A. It would be different, depending on

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

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

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

Q. Did they?

A. They analyzed it, yes.

Q. Did they see degradation?

A. A very little degradation.

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

A. They wrote a report on it.

Q. Has that been produced?

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

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

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

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

A. No. No, not at all.

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

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

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

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

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

A. That's correct.

Q. You saw some documents DuPont wrote?

A. Yes.

Q. How many?

A. One or two.

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

A. There were some TI documents as well.

Q. How many of those?
A. I don't remember exactly, but there was pressure cycling data, test reports. There may have been some other things.
Q. Okay. The Wak -- The Wako switch --
A. Yes.
Q. -- y'all did some tests on that --
A. Yes.
Q. -- for this -- for the power steering pressure switch that Nissan had been using made by Wako?
A. Yes.
Q. What did y'all find out about that switch?
A. Well, first, the -- that switch was being used by Nissan on -- in a brakes -- in a brake application and a power steering application.
Q. Kind of like the one we're talking about?
A. I don't know the details of the application.
Q. Okay. What did you find out about that switch --
A. The --
Q. -- testing of the Wako switch?
A. The Kapton had a higher stress condition than the TI switch and they were -- they were only

using one layer of Kapton.

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

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

Q. Which was what, 250,000 cycles?

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

Q. How many did the Wako handle?

A. I don't remember.

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

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

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

A. Yes, TI did.

Q. So what type of stitch did TI provide?

A. A pressure switch.

Q. What's the number for it?

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

Q. What type of Kapton does it use?

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

really not a hundred percent sure.

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

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

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

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

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

A. Yes.

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

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

Q. What do the numbers mean?

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

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

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

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

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

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

(Exhibit No. 5 marked.)

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

A. Yes, that's correct.

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

MS. ALVAREZ: Objection, form.

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

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

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

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

Q. That wasn't DuPont's decision?

A. Not that --

Q. They just --

A. -- I'm aware of.

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

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

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

A. Not that I'm aware of.

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

manufacturing process --

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

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

A. Not that I'm aware of.

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

A. Can you repeat that question for me?

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

MS. ALVAREZ: Objection, form.

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

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

of Kapton for any TI pressure switch?

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

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

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

Q. Which ones?

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

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

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

Q. Have you ever seen any documents over at

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

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

Q. Which ones?

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

Q. Why not?

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

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

A. Yes, brake fluid is different.

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

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

And also, in the brake fluid -- you can't have water mixable in the brake fluid, which the teflon can provide a protective barrier against that water mixed in the brake fluid.

Q. Okay. Brake fluid tends to absorb moisture?

A. Yes.

Q. Water?

A. Yes.

Q. And water is corrosive to Kapton or detrimental?

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

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

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

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

A. There are discussions around that that --

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

Q. Is that true?

A. Is what true?

Q. That it is damaged in the crimping process.

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

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

A. That's correct.

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

A. Yes.

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

A. You showed me that this morning.

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

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

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

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

Q. When did you learn about it?

A. Learn about what?

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

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

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

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

Q. Right.

A. -- there was none on that vehicle.

Q. Would --

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

Q. Okay. Designed by TI?

A. Designed by TI and approved by Ford.

Q. Manufactured by TI?
A. Yes.
Q. And those switches had Kapton seals, right?
A. Yes.
Q. They were crimped in the manufacturing process by TI, correct?
A. Yes.
Q. They had an elastomer seal, correct?
A. Yes.
Q. And it's your testimony that none of those switches were damaged during the manufacturing process and specifically during the crimping stage?
A. Yes.
Q. And how do you know that?
A. Because in the design of the switch, then subsequent testing of the switch to prove that the stitches met the expected performance parameters of the switch and then during subsequent testing and production where we take samples of switches and exercise and test those switches, all switches met specification.
Q. Ford did some testing too, didn't -- didn't it?
A. What type of testing? I'm not sure what

you're referring to.

Q. Just some testing on these switches.

A. In what time frame, development, recently?

Q. Did they do some development testing?

A. I assume -- We provided switches to Ford during the development of the part and I would assume they did testing of those switches on vehicles.

Q. After the cars started catching fire, did Ford do some testing?

A. Yes.

Q. Did you know that Ford was claiming in some of their testing that -- that there was contamination in the electrical field -- field of the TI pressure switch that was caused by a perforated Kapton seal? Did you know that?

A. Can -- Can you repeat that?

Q. Have you ever heard that before, that Ford was claiming that the Kapton seal had been perforated or damaged in the manufacturing process and they showed this with some testing they did?

A. No, I was not aware of that.

Q. You weren't aware that Ford was claiming that when that Kapton seal was perforated because of a manufacturing defect caused during the crimping

process, that some corrosion begins to form in the electrical components? You weren't aware of that either?

A. I -- I have not heard anything from Ford where they say, during the crimping process the Kapton seal was compromised so that fluid could flow through the Kapton seal to the switching parts.

(Exhibit No. 6 marked.)

Q. So you haven't seen Exhibit 6 then or any of the testing that resulted in Exhibit 6 that Ford has conducted?

A. I don't know if I've seen this exact one. I've seen variations on this. This does not say that the Kapton seal is perforated during the crimp process.

Q. Okay. But it does say that it's perforated?

A. Yes.

Q. Can you think of any other way that the Kapton seal, the teflon coated Kapton seal for the pressure switches on the '92, '93 Panthers, could be perforated other than -- other than during the manufacturing process?

A. Sure.

Q. How?

A. When the Kapton wears out.

Q. How would that happen?

A. The end of the life of the switch after cycling. Excessive cycles, eventually the Kapton will wear out and be perforated.

Q. All right. In other words, the switch has exceeded it's -- the cycle specifications provided to TI by Ford?

A. Yes.

Q. The Kapton wears out and becomes perforated?

A. Yes.

Q. And that's Ford's responsibility?

A. It's Ford's --

MR. MANSKE: Objection, form.

A. It's Ford's responsibility to define the specifications and make sure those specifications are accurate for what the part will see in the application.

Q. Okay. Now, this may sound silly to you, but when these switches are being manufactured, you're not standing over there watching each one come off the assembly line, are you?

A. No, I'm not.

Q. Is anyone?

A. There are -- There are people on the production line.

Q. Okay. When the -- When the TI pressure switches that are the subject of the recall for the '92, '93 Panthers are coming through the TI assembly line, they're being produced, is there anyone that sits there and looks at every single switch during the crimping process?

A. There are -- There are people there running that piece of equipment. I wouldn't think they're looking at every switch during the crimping process.

Q. How -- Of the switches coming through there, how many are actually looked at during the crimping process to make sure that the Kapton's not damaged? Of those going through that process, how many are actually examined?

A. We do -- That's what we call SPC measurements, Statistical Process Control. We grab a sample of switches from each lot and make measurements on those switches to guarantee that the process is operating correctly.

Q. What's the sampling rate for the TI pressure switches in the '92, '93 Panthers that are the subject of the Ford recall?

A. I think it's about five pieces per lot.

Q. Five pieces per lot. How many are in a lot?

A. Four-Thousand pieces.

Q. All right. Five in 4,000 go through what's called the SBC sampling process, right?

A. SPC, Statistical Process Control.

Q. Who arrives at that sampling rate of five in 4,000?

A. TI Determines that sampling rate. Ford reviews our process and accepts our -- our control process which lists what our sampling rates are.

Q. Okay. And then, so what happens when these five out of 4,000 are pulled off the production line?

A. We make measurements to make sure that the switches, what we're measuring are -- are within Statistical Process Control.

Q. Has that been produced?

A. We don't --

MS. ALVAREZ: Objection, form.

A. We don't have any of the SPC data from back to that time frame. We've looked and it doesn't exist.

Q. Okay. Where did it go?

A. I assume it was discarded.

Q. What did it show? What did this discarded SPC data show with regards to the five out of 4,000 switches that were pulled from the assembly line during the time period that TI pressure switches used on '92, '93 Panthers were produced? What did that data show?

A. I would suspect it shows that the process was operating fine.

Q. And you know -- How do you know that?

A. Because I know how TI works. And if there's a problem, if the part goes out of Statistical Process Control, we stop the line, fix the problem. Limits are set up inboard of the specifications to make sure that we will catch a problem before it could be produced out of specification.

Q. Okay. So what does the data show?

A. I haven't seen the data.

Q. Anyone at TI know what the SPC sampling rate measurement showed with regards to the TI pressures switches that were manufactured and used on '92, '93 Panthers?

A. I don't know.

Q. Okay. These other switches that we talked

about, Nissan and GM, Ford, Chrysler, Volvo and others, what sampling rate did they use when they're being made?

A. I don't know the exact sampling rates on each one.

Q. Is the sampling rate the same for all TI pressure switches?

A. I don't know if it's all the same or not.

Q. Does anyone examine the Kapton seal in the SPC control -- Statistical Process Control measurements that are taken to determine if the Kapton has been damaged in the manufacturing process?

A. We're not measuring the Kapton in that process.

MR. JOLLY: Objection, nonresponsive.

Q. Does anyone examine the Kapton in the SPC process for the TI pressure switches that were used on the '92, '93 Panthers to determine if the Kapton was damaged in the manufacturing process?

A. The process is set up to make sure that the process does not damage Kapton. I don't know of anyone -- the specifics or of anyone reviewing Kapton, looking at Kapton for damage. SPC is taken at several different points on the production line.

I don't want to mislead you. I think that that's the only point where it's taken. And there are several other tests on the production line to make sure the part is meeting its intended specification.

MR. JOLLY: Objection, nonresponsive.

Q. In any of the SPC procedures that are used in the production line for the TI switches that are used on the '92, '93 Panthers, when five out of 4,000 switches are pulled, at anywhere in the production line, does anyone look at the switches to determine if the Kapton was damaged in the manufacturing process?

A. I don't know.

Q. Same question for any other switches.

A. I don't know.

Q. Well, how has the manufacturing process changed there?

MS. ALVAREZ: Objection, form.

A. Changed where?

Q. For this particular switch involving the '92, '93 Panther.

MS. ALVAREZ: Objection, form.

A. Changed when?

Q. Ever.

A. The initial launch of the pressure

switches, we used the crimped -- crimped head off of the hand line and later switched to a crimping process on what we call the AMI machine, which is a more automated line.

Q. I guess the crimped head process is manual?

A. The -- The manual aspect of it really is the load of the parts. The -- The crimp die coming down and actually crimping the part is automatic, push a button to actuate.

Q. What's AMI mean?

A. I think it's the name of the company that made the -- the basic machine.

Q. What's the name of that company?

A. I think it's AMI. I -- I don't know the details around that. I'm not sure.

Q. Where are they?

A. I don't know.

Q. Has TI communicated with AMI with regards to the manufacturing of a TI pressure switch in any regard where it might've been alleged or there was a concern that their machine was damaging Kapton in any way?

A. I'm not aware of anything. Also, I'm not sure how much of that machine is -- is made by AMI.

Q. Or anyone else, AMI or anyone else associated with AMI?

A. TI has not contacted anyone and we feel that our crimping process is in control and TI was producing switches there that -- that operated properly.

Q. Has anyone from AMI or associated with AMI in any way come out to TI and looked at the machine to determine if it was damaging Kapton during the manufacturing process?

A. Ever or --

Q. Yeah.

A. Not that I'm aware of.

Q. With regards to the Ford '92, '93 Panthers?

A. I don't know.

Q. With regards to any other car or switch used on any other car?

A. I don't know.

Q. And so the automated process using this AMI machine is more productive?

A. It's more automated. You can produce more switches off that equipment, yes.

Q. How many more?

A. I don't know exactly.

Q. Were the Ford -- '92, '93 Ford Panthers that are the subject of the Ford recall, which process did they use to crimp the Kapton, the crimped head process or the AMI?

A. Both.

Q. For the '92 and the '93?

A. The -- In -- When we launched production, we launched using the -- the hand line for crimping and then we switched to the automated line. Both of those time periods are covered in the time of the recall.

Q. Okay. Why?

A. I don't know why. Ford decided the timing of the recall.

Q. Does TI agree with -- with Ford --

MS. ALVAREZ: Objection, form.

Q. -- that the Kapton is damaged in the manufacturing process because of a change in the crimping process?

A. No, TI does not.

MS. ALVAREZ: Objection, form.

Q. What does Ford say about that?

MS. ALVAREZ: Objection, form.

A. What does Ford say about what?

Q. The manufacturing process damaging the

Kapton.

A. Ford has expressed concerns that during the manufacturing -- manufacturing process we had done something to the -- to the Kapton that may have reduced its cycle life.

Q. Did it?

MS. ALVAREZ: Objection, form.

A. Did it what?

Q. Did it reduce the cycle life?

A. No. I believe that the switches all met specification and nothing during the crimping process affected the cycle life.

Q. Did not affect the cycle life?

A. Right.

Q. Going from manual crimping process to automated did not affect the cycle life of the switch?

A. I don't believe it did, no.

Q. Did -- When the manufacturing process was changed, did TI inform Ford that it was changed?

A. TI -- TI informed Ford that we had successfully passed qualification testing that showed the automated process met specification and we requested to Ford that we be allowed to make the change and that change was made after Ford gave us

approval for the change.

Q. Did anyone at Ford oppose that approval?

A. Not that I'm aware of.

Q. Did anyone at TI?

A. Not that I'm aware of.

Q. Why did TI inform Ford of a manufacturing process change?

A. We were required to -- to have any changes approved by Ford on the manufacturing line.

Q. What -- What requirement, a contract or something?

A. Contract. And we were also what's called Ford Q1 Certified. So we're signing up to Ford quality requirements and that's one of their requirements.

Q. Did TI request a variance?

A. What do you mean by variance?

Q. You know, variance in any regard when -- with regards to this change in the manufacturing process.

A. When we changed from the hand line to the automated line?

Q. Yeah. Other than just changing a variance in the specifications, for example.

A. No, not that I'm aware of.

Q. A variance in any regards -- Was -- Was there a request for a variance in any regard other than changing the manufacturing process from a manual to an automated?

A. Not that I'm aware.

Q. Is there a contract? Has that been produced?

A. I don't know.

Q. How big is this contract?

A. I -- I don't know the details on the contract.

Q. Who at TI is responsible for making sure that if the manufacturing process is going to be changed that it's done in -- to conform with the contract that TI has with Ford?

A. Our Quality Engineering Department.

Q. Who's in charge of that?

A. Andy McGuirk's the Quality Manager.

Q. Do you know about that process?

A. Which process?

Q. Andy McGuirk's responsibility to make sure that the manufacturing process is in compliance with a contract that TI has with Ford to produce the pressure switches for the '92, '93 Panthers, do you know about that?

A. I don't understand the question. Can you rephrase it?

Q. Well, did you get involved in it?

A. In 1992, 1993?

Q. Yeah.

A. No.

Q. Can you talk about that subject?

MS. ALVAREZ: Objection, form.

A. Which subject?

Q. The communications that went back and forth between Ford and TI to make sure that the manufacturing process was in compliance with the contract.

A. I have not seen any contract. I've seen some of the documents that went between TI and Ford about what manufacturing process we're going to use and testing we did to qualify the part.

Q. Spell McGuirk, please.

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

Q. Where is he?

A. He works at Texas Instruments.

Q. Where?

A. In Attleboro, Massachusetts.

Q. How many people are under him?

A. I don't know the exact number.

Q. So you haven't looked at the contract?
A. I have not.
Q. Do you know if TI complied with the contract when the manufacturing process was changed if you haven't looked at it?
A. I know how TI operates and I know that TI would comply with our requirements to our customers.
Q. But without looking it, I guess you wouldn't know?
A. No. I'm confident that TI complied because that's the way we do business.
Q. Okay. Do you see on Exhibit 6, Item No. 2? Read that out loud.
A. Switch components and cup corrode with aid of electric field and contamination.
Q. Is that true?
MS. ALVAREZ: Objection, form.
A. If the right contamination is in the switch cavity, corrosion can occur.
Q. Okay. Could that cause a fire?
A. Based on the lab experiments we talked about earlier, we were able to show that with saltwater in the switch cavity and enough power applied, that the plastic on the base on the switch can ignite.

Q. Okay. I think, when you were describing that test earlier you explained to us that -- that the way that the circuit is completed is because the saltwater's on the outside of the switch, right?

A. No. Saltwater is on the side of the switch cavity and that completes the circuit.

Q. Right. The saltwater's inside the electric components because you drilled some holes in the seal -- in the electrical plug-on seal and then the --

A. And we -- And we -- I'm sorry. We injected the saltwater into the part.

Q. And then the saltwater completes the circuit because it's on the outside of the metal part of the switch, right?

A. It's outside of the component, inside the switch.

Q. Right.

A. Inside the switch cavity.

Q. It doesn't go through the Kapton though?

A. It does not, no.

Q. Right. But in Exhibit 6 it looks like somebody's talking about the circuit being completed internally as opposed to on the outside of the switch, right?

A. Can -- Can you repeat that?

Q. Well, it looks like this diagram, this scenario diagram marked Exhibit 6, seems to describe completing the circuit internally as opposed to externally like you did in your testing on Exhibits 3 and 4.

A. It talks about the corrosion occurring in this area (Indicating), which is the same area we created corrosion during our testing inside the switch cavity.

Q. Right. And then the circuit's completed internally after that corrosion occurs, correct?

A. And if there's a conductive enough fluid during the corrosion process.

Q. Right. The testing that you did though, it's my understanding that the circuit is completed and if there's saltwater on the outside of the switch.

A. No. No, that's not correct. The testing we did of the saltwater was internal to the switch here.

Q. Okay. So you're not just blasting saltwater all over the outside of this switch --

A. No.

Q. -- you're just keeping it isolated to the

inside of the electrical component?

A. We were injecting saltwater into the -- the base of the switch, into the electrical components.

Q. Okay. So the circuit was completed internally?

A. Internally, correct.

Q. Just like the scenario on Exhibit 6?

A. Yes.

Q. Okay. But the scenario on Exhibit 6 does not include exposure to saltwater under pressure to the electrical components, does it?

A. Yes, it does. It discussee contamination entering also through the connector seal demonstrated by this arrow (Indicating).

Q. Oh, okay. So the contamination, through whatever source, could come in through the electrical component -- the electrical connector?

A. Yes.

Q. And it could also come through the Kapton contamination under a different scenario other than No. 6, the contamination could -- could penetrate the Kapton if it were perforated and cause corrosion, correct?

A. If the Kapton was perforate -- perforated,

a fluid could come through into the -- to the switch area and if that fluid was conductive, could drive corrosion into the components in the presence of power being applied.

Q. And in scenar -- in the scenario marked Exhibit No. 6, the only way to really get a contaminant into the switch through the electrical connector is if the electrical connector seals failed for some reason?

A. Either fails or not present, the connector isn't fully engaged during the assembly process, many of those types of issues.

Q. Whose -- Who designed the connector?

A. Ford or a Ford supplier. I don't know exactly who.

MR. JOLLY: Did you want to take a lunch break?

MS. ALVAREZ: Whenever. To eat yourself? Are y'all ready?

MR. JOLLY: He needs to change the tape. I'm not ready for a lunch break, but that's okay.

THE WITNESS: That's okay with me.

MR. JOLLY: Okay.

THE VIDEOGRAPHER: Going off the

record. The time now is 12:14.

(Lunch recess had.)

THE VIDEOGRAPHER: We are back on the record. The time now is 1:20, Video Tape No. 2.

Q. When was the testing in Exhibits 3 and 4 preformed?

A. Probably February, March time frame, 1999.

Q. 1999. Okay. Was that the first time -- What did you call this type of testing?

A. We were trying to create ignition in the pressure switch.

Q. Okay. So what type of testing are we calling this?

A. I don't know if there's a specific name. We refer to it as -- here in this document (Indicating), called a laboratory model of accelerated plastic based ignition.

Q. Let me see that. You're -- You're reading off Page 2 of Exhibit 2, aren't you?

A. Yes.

Q. And I'm going to highlight what you just read, a laboratory model of accelerated plastic based ignition of the switch resulting from fluid in the switch cavity coupled with application of constant power as designed in the speed control

circuit, right?

A. Yes.

Q. All right. So basically it's a laboratory model of accelerated plastic base ignition of the switch under some testing criteria?

A. Some certain -- certain test conditions.

Q. And that was the first time that Texas Instruments -- 1999?

A. 1999.

Q. -- did this type of testing on the subject pressure switches?

A. We did testing for weeks, months, trying to see if in the lab we could create ignition. This was not the first time we ran the test and -- and got ignition. Testing was going on for a month or two at that point, trying to -- to recreate the ignition.

Q. So for a period of a month or two in the time frame, 1999, this was the first time that Texas Instruments did this type of laboratory model of accelerated plastic based ignition of the switch under the test criteria described?

A. Yes. As far as I know, yes.

Q. Okay. Why was that the first time that TI did that type of testing?

A. It was the first time we had -- had gotten any evidence as far as -- of what the system configuration was. We needed that information in order to run the test and Ford had asked us to try and run the test to see if we could recreate ignition.

Q. Why didn't Texas Instruments perform some type of testing like this laboratory model of accelerated plastic based ignition of the switch testing under criteria that you've described during the development stage before this switch was installed in those '92, '93 Panthers?

A. TI did not have the system knowledge to run this type testing to know how to hook the -- the switch up in testing.

Q. And the reason that TI did didn't have that system knowledge, because they didn't ask?

A. Ford develops the system and they -- they're developing all the system testing that they need to do. The way the process works, they give us a specification, we design to that specification, we provide them prototypes, we provide data that says the parts meet specification; we provide them data which says: What could go wrong in the switch? So they can take that information and compare it with

all the other components in the system to make sure if any issues do come up, there won't be a problem in the system.

Q. Well, to answer my question then, isn't it true that TI could simply ask for this information during the development stage? Couldn't TI do that?

A. I don't know whether TI asked for the information or not.

Q. That's not my question. Couldn't Texas Instruments just simply ask for this information in the development stage?

A. TI could ask for it. I don't know whether T -- anyone at TI did ask for it or not.

Q. You don't --

A. I don't know whether Ford had all the system information to find at that point.

Q. So you don't know if TI asked, you don't know if they didn't ask?

A. That's correct.

Q. All right. And, of course, it -- would it be fair to say that if TI did ask for this information that could've been used for this testing that's depicted on Exhibits 3 and 4, would it be fair to say that Ford would've probably given the information to TI necessary to conduct the test

appropriately?

A. Don't know.

MS. ALVAREZ: Objection to form.

A. I don't know if Ford would've been able to give the information or not.

Q. Well, if the information was available and Ford had it, would it be fair to say that Ford would fork over the information if TI asked for it?

MS. ALVAREZ: Objection, form.

A. Which -- Which information are you referring to?

Q. The information necessary to create a simulation of the circuit that the switch is going to be placed in.

A. I don't know whether Ford would've provided that information or not.

Q. I mean, you're not saying that Ford would refuse to give TI vital information necessary to properly test the switch in a circuit similar to the circuit that is going to be used in the car; you're not saying that, are you?

A. I'm not saying Ford would refuse to provide information. I don't know whether they would provide it or not. What I am saying is, Ford has -- takes the responsibility to make sure that

the switch is going to operate properly in the system environment.

Q. Right. But then after TI gets sued and these cars start catching on fire, TI then chooses to do this test after the fact, correct?

A. TI was --

MS. ALVAREZ: Objection, form.

A. TI was not being sued when these -- when these tests were being run.

Q. Has Ford asked TI for indemnity at the time that these tests were run?

A. Ford had not, no.

Q. Had Ford asked TI or insinuated that Ford might ask TI for indemnity when these tests were run?

A. Not that --

MS. ALVAREZ: Objection, form.

A. -- I'm aware of. I don't know of any time during these tests that Ford asked for indemnity.

Q. Well, I mean, you know -- you know that's coming down the road, don't you? You know Ford's going to probably ask for indemnity if it's an -- a serious expense to Ford when these tests were run; isn't that true?

A. No, I don't know. I don't know what

Ford's going to ask TI for.

Q. So TI doesn't have the foggiest idea whether a car company might ask them for indemnity when it's alleged that a TI component is causing big problems with that OEM's vehicles?

MS. ALVAREZ: Objection, form.

A. That's not what I'm saying. What I'm saying is, we were working with Ford engineering to try and understand what might be happening on the Town Car vehicles and that was the types of discussions that we had.

Q. Well, who knows the most about this switch, Ford or Texas Instruments?

A. Texas Instruments.

Q. All right. And the person that knows the most about the circuitry is Ford, right?

A. Ford or some of their sub-suppliers.

Q. Okay. And so the only way for TI to learn what Ford knows or it's -- or it's sub-suppliers know about the circuitry is for TI to either ask of Ford to voluntarily give that information to TI, correct?

A. Yes.

Q. And to your knowledge, TI never asked for the circuitry information during the development

stage of the switch?

A. TI asked for all specifications required of TI to go design that switch. Ford provided those specifications to TI.

MR. JOLLY: Objection, nonresponsive.

Q. To your knowledge, did TI ever request of Ford the circuitry specifications for the switch during the development stages of this switch?

A. TI asked -- Again, all I can answer is, TI asked for what specifications were required to design the switch and that was used in the application and TI -- and Ford provided those specifications for TI.

MR. JOLLY: Objection, nonresponsive.

Q. The circuitry information, did TI ever ask for it in the development stage of the switch?

A. I don't know what -- the details of what questions were asked and what weren't. I know that TI asked for all the specifications required to design the switch.

Q. Should TI know the circuitry specifications for a switch -- for a circuit that is going to incorporate a TI pressure switch in the development stage of the pressure switch?

A. It's impossible for TI to know all the

details around everything of how that circuit -- how that switch may interact in the circuit. But meantime, standards -- the switch, even when it's manufactured, we don't even supply it direct to Ford. That switch was -- was supplied to Highlight Industry, who then mounts the switch and supplies it to Ford. There's many different suppliers and sub-suppliers involved in that whole vehicle and Ford integrates those suppliers' components together to make sure they operate correctly in the system.

MR. JOLLY: Okay. Objection, nonresponsive.

Q. Should TI ask for -- And it is Ford that's going to provide the specifications; not Highlight, right?

A. That's correct.

Q. All right. Should TI ask Ford for the amperage and current specifications of a circuit that TI knows one of its switches is going to be placed during the development stages of the switch?

A. TI should ask Ford for all the information required to design the switch.

Q. Specifically current and voltage, amperage, should TI ask for that information in the development stage?

A. It's important to understand in the environment what loads might be on the switch.

Q. Loads include current, amperage, volts, right?

A. What relates to the operation of the switch. Whatever of those loads require the operation of that switch, it's important to understand that.

Q. The reason I have to keep asking the question over is because you didn't answer it. My question was: Does --

MS. ALVAREZ: Objection, sidebar.

Q. -- loads include current, amperage and volts?

A. Those would typically include voltage and they include current.

Q. Amperage?

A. Amperage is current. It's a unit of measure of current.

Q. Okay. The resistors between the fuse and the switch, should Texas Instruments ask Ford for the specifications of the resistors, if any, between the fuse and the switch for the circuitry in which a TI pressure switch is going to be placed during the development stages of the switch?

A. TI doesn't have the expertise to interpret all that information and -- and know what information that's important or not.

Q. TI doesn't have the expertise to interpret --

A. All the specifications --

Q. -- a circuit --

A. -- all those [sic.) around the full system, TI doesn't have the system understanding and the system expertise.

Q. There's no one at TI that knows -- understands the circuit that's involved in the pressure switch that we're here talking about?

MS. ALVAREZ: Objection, form.

A. What I'm saying is that TI doesn't have the system knowledge and the system expertise to understand all the specifications and all the different components that are being used in the system that Ford is integrating together.

Q. Did TI understand its tests that it did here on Exhibits 3 and 4 and the circuitry that was used to conduct the tests in 3 and 4?

A. Yes.

Q. Okay. All right. So at the time that this testing was done in 3 or 4 -- depicted on

Photos 3 and 4, TI understood the circuit; but during the development stage of the switch, TI could not understand the circuitry. And so what I would like to know is, what happened from the time period of the date that the switch was developed until this testing in 1999 that you photographed here on 3 or 4?

A. T --

MS. ALVAREZ: Objection, form.

A. TI understood the circuitry in this test. That's what I've responded -- That's what I've answered to.

Q. Okay. So nothing happened in that time period?

MS. ALVAREZ: Objection, form.

A. Ford provided TI more information about how -- how the circuitry is configured in the system.

Q. And you've told us what that was. Tell us again.

A. That the switch was powered continuously and that there was no current limiting feature between the fuse and the switch and that the fuse in the -- in the system was a 15-amp fuse. And that's -- that's all I can remember at this point.

Q. And that information that was conveyed to TI, is that information that TI should've asked for from Ford during the development stage of the switch?

A. Ford needs to make sure that the system is designed and the system architecture will work. They -- They have responsibility to have an understanding of all that system. TI doesn't have the understanding of the system to interpret what all that information may mean.

Q. Don't you think it would be more productive and you would have less chance of things like this happening if TI knew the circuitry and understood the circuitry in the development stage of the switch and Ford understood the switch when they were designing the circuit?

MS. ALVAREZ: Objection, form.

Q. Don't you think that would be more productive, sir?

MS. ALVAREZ: Objection, form.

A. TI explains to Ford how the switch works so that Ford can approve the design and so that Ford can take into account any issues that may occur in the switch in their system development and system design.

Q. Don't you think that would be more productive?

MS. ALVAREZ: Objection, form.

A. What would be more productive?

Q. If TI knew the circuitry and understood it during the development stage of the switch.

A. It's not possible for TI to understand everything related on the vehicle that -- that comes together in that system. Ford is the system integrators, they have that system expertise. TI does not have that system expertise.

Q. Okay. If TI had the information that it had when it did these tests that you photographed in Exhibits 3 and 4, could TI have done something different with the switch so that these fires wouldn't happen if the fires are being caused by the switch?

A. Can you repreat (sic.) -- repeat the question?

Q. What would TI have done differently if TI had known what it knew after it did the tests that you photographed here in Exhibits 3 and 4 if it had that information at the time of the development of the switch?

A. Based on the results of this test TI

recommended to Ford that the current be limited that enters the switch.

Q. Okay. So it sounds like TI now understands the circuitry and what needs to be done to it?

MS. ALVAREZ: Objection, form.

A. That's not what I'm saying. I'm saying, as based on this lab experiment TI was able to demonstrate under certain conditions switch ignition could occur based on information Ford provided to TI and TI made recommendations to -- the way to prevent this from happening, based on laboratory experiments, was to limit the current.

Q. Okay. What could be done different to the switch, not the circuitry, the switch? What could TI do to the switch?

A. I'm not sure what could be done differently to the switch to make sure that this lab experiment resulted in what happened.

Q. Well, couldn't TI design the switch so that it could handle a load equivalent to the load of the circuit? Couldn't TI do that?

A. It wasn't a matter in this experiment of the TI switch not handling the load. It was a matter of the corrosion that occurred inside the

switch, causing a resistive heating element --

Q. Aren't --

A. -- to form.

Q. Aren't there electrical components that don't corrode, like the components that are used in this switch that could be used, that could be changed?

A. All of the different -- different materials can corrode in certain environments.

Q. Aren't there some materials that wouldn't?

A. I don't know all the details around that. I'd have to spend some time researching that.

Q. You've never heard of some platings that are available for these electrical components? Ever heard of that?

A. Sure. There are platings available.

Q. Name one.

A. There's gold plating, silver plating.

Q. All right. So that could've been done, right?

MS. ALVAREZ: Objection, form.

A. Could've been done.

Q. To change the switch, you could -- you could coat the electrical components with different materials to prevent the corrosion from causing the

short, correct?

A. It -- That not -- would not have necessarily eliminated this from happening.

Q. It might have though, right?

A. I don't know.

Q. Well, it may have, based on a reasonable engineering probability, the reason that those coatings are available is to prevent corrosion --

A. Yeah.

Q. -- highly corrosive environments where switches might be used, correct?

A. There are many reasons why those coating may be available.

Q. Is that one of the reasons?

A. Typically, it's for contact wear.

Q. Is that one of the reasons though, corrosion prevention?

A. No. Typically, it's for contact wear in switches.

Q. Is that also an additional reason, contact wear, corrosion prevention?

A. In switches, the primary reason would be for contact wear.

Q. That wasn't my question, was it? Additional reason other than contact wear to prevent

corrosion, coatings are used for that reason, aren't they?

A. At times coating can be used to prevent corrosion, yes.

Q. Okay. That could've been done, right?

MS. ALVAREZ: Objection, form.

Q. I mean, if TI had been provided this information, TI could've made some changes to the switch which could include coatings which could prevent corrosion?

A. And there were coat --

MS. ALVAREZ: Objection, form.

A. There were coatings and platings in the switch that -- that do prevent corrosion.

Q. Different coatings that would've prevented this type of corrosion, that could've been done if Ford had informed TI of -- of the circuitry, correct?

MS. ALVAREZ: Objection, form.

A. Can you repeat the question?

Q. Well, if Ford had told TI about the circuitry, possible corrosion, exposure to corrosive materials, the amperage, the voltage, TI could've used other coatings other than the coatings that were used to prevent corrosion?

MS. ALVAREZ: Objection, form.

Q. Or to mitigate corrosion, correct?

A. But, in fact, T -- Ford told TI that the mating connector would be sealed and no fluid would be passed into the device --

Q. That wasn't my question --

A. -- the mating connector.

Q. Wasn't my question. Do you want me to ask it again?

A. Yes.

Q. TI could've used a different coating in the switch on the electrical components which could mitigate corrosion, correct --

MS. ALVAREZ: Objection, form.

Q. -- if TI had been made aware of the circuitry?

A. I don't know. I don't know how to answer that.

Q. Doesn't TI make satellites? They make satellites, don't they?

A. I'm not aware of TI making satellites.

Q. Telephones, calculators, computer chips, microprocessors, right?

A. I know TI makes calculators. I know they make some chips.

Q. What else? I mean, chips and switches that are exposed to highly corrosive environments, TI makes?

A. I don't know.

Q. You don't know?

A. I don't know.

Q. Do y'all have anyone on the group involved in the design of this switch who had some kind of working knowledge of what types of electrical components should be used for switches that might be exposed to a corrosive environment?

A. We've had people in the group designing switches for years, with millions of switches out in the field working properly.

Q. That wasn't my question. Someone in the group involved with the design of the switch who's familiar with how to stop corrosion in a pressure switch or prevent it or mitigate it?

A. The design of the switch was included with different platings to make sure that during the Ford specified testing the switch would not corrode and would operate properly.

Q. Okay. That wasn't my question. My question is: I would like to have a name of someone who would be -- Since you're not -- familiar with

what platings might stop corrosion. Was there anyone in the group involved in the design of this switch who -- who was; and if so, can you tell us who that person was?

A. I'm not saying I'm not familiar with any platings that don't prevent corrosion. As I said, many of the components in the switch are plated to prevent corrosion.

Q. Okay.

A. There's a salt spray specification that the switch meets and it's plated to make sure it meets that specification.

Q. Who in the group involved in designing this switch had expertise in that field?

A. Had expertise in which field?

Q. Preventing corrosion with the electrical components in the switch. I need a name.

A. I don't know.

Q. Ford isn't doing business with TI anymore; is it? Ford's not buying pressure switches from TI anymore; is it?

A. Ford does buy pressure switches from TI.

Q. Is Ford buying speed control deactivation switches from TI as of today's date?

A. Yes.