# EA02-025

## FORD 10/27/03

## APPENDIX N

## BOOK 34 OF 61

## PART 2 OF 6

IN THE CIRCUIT COURT OF JACKSON COUNTY, MISSISSIPPI

OUIDA CAMPBELL AND JAMES R. CAMPBELL — PLAINTIFFS

VERSUS — CASE NO. CI-99-0211(3)

FORD MOTOR COMPANY, D&L, INC. OF COLLINS F/K/A D&L FORD, INC., WOOLWINE FORD LINCOLN-MERCURY, INC., SUCCESSOR IN INTEREST TO D&L FORD, INC., E.I. DU PONT DE NEMOURS AND COMPANY, AND TEXAS INSTRUMENTS INCORPORATED — DEFENDANTS

**ORAL AND VIDEO DEPOSITION OF**

**FREDERICK JAMES PORTER**

NOVEMBER 17, 2000

Volume 3

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

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ORAL AND VIDEO DEPOSITION of FREDERICK JAMES PORTER, 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 November, 2000, before C. Lee Parks, Certified Shorthand Reporter in and for the State of Texas, reported by computerized stenotype machine, at the offices of Feeney, Kellett, Wienner & Bush, P.C., 35980 Woodward Avenue, Bloomfield Hills, Michigan 48304-0934, pursuant to the Mississippi Rules of Civil Procedure and the provisions stated on the record or attached hereto.

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EXHIBITS



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(Exhibit No. 42 marked.)

*THE VIDEOGRAPHER:* On the record. This is the continued video taped deposition of Fred Porter. Today if Friday, the 17th day of November. The year is 2000. The time is 10:29:05.

E X A M I N A T I O N

*MR. MAYER:* Mr. Feeney, may I have a continuing form objection like I had yesterday so I will not need to interrupt you?

*MR. FEENEY:* You may.

*MR. MAYER:* Thank you.

*MR. FEENEY:* Thank you very much.

Q. (BY MR. FEENEY) Good morning, Mr. Porter.

A. Good morning.

Q. Let me continue my examination of you, sir. I've put in front of you a document marked as Exhibit 42. Will you tell us, sir, have you ever seen that document before?

A. Yes, I have.

Q. What is that document?

A. It appears to be a document from May of 1989 for the model year '92 cruise control pressure switch showing the circuitry -- or showing circ -- circuit diagram that the pressure switch could be used in.

Q. Do you know who generated this document?
A. I believe this was generated by Texas Instruments.
Q. And what makes you say that, sir?
A. For one, they developed -- or they provided this information from previous discovery; secondly, from documentation of the Highlights that they presented, they referred to the early development of the brake pressure switch as a cruise control pressure switch. And I believe the Precision Controls Design Engineering Group was a part of Texas Instruments.
Q. Basically, does this document lay out the basic circuitry pertaining to the brake pressure switch?
A. In basic terms it does, yes.
Q. And are there certain specifications that are identified there?
A. Yes. The lower corner identifies specifications regarding the actuation and release pressures, the burst pressure for this switch, the number of cycles for the switch, the voltage level that the switch can see and also it identifies some current that -- that the circuit might use.
Q. Let's just go over the document briefly.

Under the one word, Overview, the document says: The CCPS. I suppose that's a reference to the cruise control pressure switch?

A. I would assume that.

Q. The cruise control pressure switch -- I'll read it as such -- is a redundant safety device in a new vacuum-less electronic cruise control designed guy by Ford. Would you agree with that --

A. Yes.

Q. -- description or statement?

A. That is true.

Q. The document goes on to say: Functionally, it replace the present vacuum dump valve by de-energizing a clutch which connects the throttle to an electric actuator. Is that an accurate description of -- of the function of the switch?

A. That would be correct also.

Q. And that is to say, the switch was ultimately installed in the '92 Town Car?

A. That's correct.

Q. It goes on to say, the document does: It is plumbed into the brake line. Is that true?

A. It would be plumbed into a portion of the brake line system.

Q. When the driver applies pressure to the brake pedal the normally closed switch opens, disconnecting the actuator from the throttle butterfly. Is that a generally accurate description of --

A. That would be --

Q. -- how the switch works?

A. -- accurate, yes.

*THE COURT REPORTER:* Wait a minute. One at a time, please.

*THE WITNESS:* Sorry.

Q. -- of how the switch works?

A. That would be generally accurate, yes.

Q. And then the specifications, it says: Actuation: 150 psi, plus or minus 50. What does that mean?

A. That means that the switch should open at approximately a hundred-and-fifty psi, plus or minus psi. So it could be as low as 100 and as high as 200.

Q. And Release: 100 psi min, what does that mean?

A. That would mean that the switch should close again and at a minimum of at least a hundred psi.

Q. And Burst: 7000 psi, what does that mean?

A. That means that the switch should be able to handle 7,000-psi of pressure without generating a leak.

Q. And Cycles: 500K, 0 - 1450 psi, 2 Hz, what does that mean?

A. That would mean to me that there's -- this switch should be able to go through 500,000 cycles zero to 1400 psi two times a second.

Q. And Voltage: Battery, what does that mean?

A. That would mean that it's connected directly to the battery.

Q. And what is the significance of that, sir?

A. That -- That the switch is going to be subjected to the power that the battery may be able to provide.

Q. If you look at the diagram, is the -- is the brake pressure switch shown schematically on the diagram?

A. Yes, it is.

Q. Is it the little circle there what -- that says Brake Pressure and an arrow drawn to the left of it?

A. That's correct. And on the right-hand

side it has the CP -- CCPS designation.

Q. And this is a schematic diagram; is that right?

A. That's correct.

Q. And what does that mean?

A. That means it's a representation on paper of -- of what the physical implementation would be.

Q. And is there a line drawn from the break pressure switch to the battery?

A. Yes, there is.

Q. Is there anything between the battery and the brake pressure switch?

A. No, there's not.

Q. Such as a relay?

A. There's no relay. There's no switch.

Q. What is the significance of that, sir?

A. To me, that would imply that who drew this schematic was expecting the switch to be connected to the battery directly.

Q. And, in fact, in terms of the -- in terms of the actual installation in the '92 Town Car, how is the switch powered?

A. In the '92 Town Car we put a fuse in between if brake switch and the battery.

Q. And is the -- is the circuit itself

connected directly to the battery?

A. Yes.

Q. As shown in the schematic?

A. Generally speaking, yes.

Q. Taking the schematic and the specifications together, what, if anything, does this tell you about whether the switch is intended to be hot wired all the time?

A. This tells me is that -- that somebody understood that this switch was going to be connected to the battery and that there were not going to be other portions of the -- or other devices in the circuit that would change the operation, such as a -- a key off switch or a relay.

Q. As an electrical engineer, sir, looking at this document, would it be reasonable for an electrical engineer to conclude, looking at this document, that this switch was not going to be powered when the engine was off?

A. Yes.

Q. Was not going to be powered?

A. It would be reasonable to conclude that -- Excuse me -- that the switch was going to be powered when the engine was off.

Q. Now, let me look -- ask you the other way.

Would it be reasonable to conclude that the engine was not -- that the switch was not going to be powered when the engine was off?

A. No, it would not.

Q. Why not?

A. There is no indication there that the engine in -- or that an ignition input is there to switch the power off.

Q. Have you seen any documents -- other documents produced by Texas Instruments at any time, either during your investigation or since, that would suggest that -- that this switch was shown in some way in a preliminary drawing or in some fashion as being anything other than hot wired all the time whether the engine's on or off?

A. I have seen nothing that would've represented to Texas Instruments that it was going to be switched off at any time; that it would always be hot.

Q. Which is exactly what Exhibit 42 says?

A. Correct.

Q. The current indication here is 0.75 amps.

A. Yes.

Q. What's that about?

A. That's an indication of the -- the current

draw that the magnetic clutch would need for the speed control system.

Q. Is that -- How does that relate to the voltage and the -- with the indication of the battery?

A. There's -- It's just really a side note of what -- what the circuit would be being used in the application.

Q. Does that, standing alone, mean that the batt -- that the switch is not going to be hot wired?

A. No, it does not.

Q. Would a -- Would a reasonably prudent electrical engineer conclude that by looking at this drawing?

A. What you would conclude is that under normal operations that 7 -- .75 amps is what the -- what the circuit would see. There are failure modes that you could think of, looking at this circuit, such as a short that would occur between the brake pressure switch and the magnetic clutch that could potentially draw more current; that -- that you'd have to look out for, protect for; you'd -- and -- and I guess that's basically what you would look for.

Q. All right. Let me go on now to a difference topic.

*MR. FEENEY:* I don't have an extra copy of this and we can -- we can mark -- if no one has an objection, we probably all have this. This is a -- This is a -- The document I'm going to be referring to is Texas Instruments' Motion To Compel Ford motor To Fully Answer Discovery, which I received a copy of by mail on November 14, 2000. There's some things that are said in here that I'm going to ask the witness some questions about. We can put an exhibit sticker on it and --

A.

*MR. MAYER:* Why don't you make a copy, since I don't have one with me, I'd -- if you're going to ask him questions about it and make it an exhibit. Why don't we take a quick break, just make a copy and then we can go on.

*MR. FEENEY:* That's fine.

*MR. MANSKE:* We'll do that.

*MR. FEENEY:* Why don't we do that. Mine is -- Let's go off the record for just a second.

*THE VIDEOGRAPHER:* Off the record. Off the record. The time is the 10:39:59.

(Recess taken.)

(Exhibit No. 43 marked.)

*MR. FEENEY:* So we can go back on.

*THE VIDEOGRAPHER:* We're back on the record. The time is 10:43:56.

Q. Mr. Porter, yesterday in response to some questions that you were asked by Mr. Mayer and, I think, Mr. Jolly, you made reference to some work that was actually done as part of your investigation to evaluate the anti-lock brake system on the Town Car and the pressures that were created in the brake lines insofar as they may affect the brake pressure switch. Do you recall those questions and your answers?

A. Yes. I believe that I referred to some testing that we had done on the Town Car.

Q. And --

*MR. MAYER:* Just a minute. Let me just say, it doesn't have a Bates number on it. I don't know whether it's been produced or not. Can anybody -- counsel for Ford tell me whether it has?

*MR. MANSKE:* That document has been produced by Ford recently. It's contained in the notebook of materials from Michelle Vogler.

*MR. MAYER:* Okay. Does it have a

Bates range? This one just doesn't have it?

*MR. MANSKE:* The notebook may be identified by number in its entirety --

*MR. MAYER:* Okay.

*MR. MANSKE:* -- and that document -- individual documents within the notebook do you not have Bates numbers.

*MR. MAYER:* Okay. Thank you.

Q. All right. The -- The -- And just to put this in context -- And I know we're repeating a little bit -- but just tell us what those tests were that were done and who did them.

A. Engineers at Ford -- Well, I guess, to put it in context of the purpose, we were concerned that we didn't know what kind of pressures were actually being experienced at the brake pressure switch during various kinds of stops. We wanted to know, one, if the -- the pressures that were being experienced were within the range of the specification and -- and what that looked like exactly. We outfitted the Lincoln Town Car with a pressure transducer mounted at the brake pressure switch; and I believe, another one mounted in another location on the brake pressure -- on -- in the brake system and had the vehicle go through

various types of stops, from easy stops to a -- a panic type stop.

Q. And who actually -- who was the technician that actually did this work --

A. I don't know --

Q. -- do you know?

A. -- who the technician was that actually did that, no.

Q. Was it done at your direction as part of the investigation?

A. Yes, it was.

Q. And you said you were interested in learning about the pressures. Why was that of interest to you?

A. There was concern that -- that there might be a deficiency in the pressures identified in the engineering specification and that -- that there could be additional, I guess, wear or something put onto the brake pressure switch as a result of -- of say, ABS being applied.

Q. And was the nature of that concern sort of a what if, I mean, so to speak?

A. Yes, it was.

Q. And -- And did you have any other -- Before you ran the test, I mean, did you have any

direct evidence that this was actually a problem or a potential -- a problem that was occurring, that was putting undue pressure on the switch?

A. No. We didn't have any evidence that said we were putting undue evidence (sic.) on the switch.

Q. Okay. So you ran these tests. And you wanted to find out what exactly in the test?

A. We wanted to find out what the pressure ranges were at the brake pressure switch and what -- what kind of timing was involved with the -- with the different kinds of stops.

Q. And did you find that information out?

A. Yes, we did.

Q. And was the -- was this information collected and recorded as data as part of these tests?

A. Yes, it was.

Q. And was the information then communicated to you as the guy that was heading up the investigation?

A. Yes, it was.

(Exhibit No. 44 marked.)

Q. And does Exhibit 44 -- What is Exhibit 44, sir?

A. Exhibit 44 is a graphical representation

of the test -- or of data collected on -- on one of the tests.

Q. And is this all the tests?

A. No. There are -- There are a series of tests. This is just one of the those that were done.

Q. This particular graph involves the 40 mile per hour panic/aggressive ABS; is that right?

A. That's correct.

Q. Why -- Why was that particular condition selected for testing?

A. Because that would be considered to be a worst case situation of pressure applied in the system and -- and having the ABS being active.

Q. Were you able to determine from the results of this test whether the pressures that were experienced at the brake pressure switch were -- whether they were within specification?

A. The pressures at the brake pressure switch were well within the -- the specification required -- or required by the specification and even below the pressures that are part of the impulse testing in the specification.

Q. And can you give us just a ballpark of how much below and what the range -- what the spec was

and what the actual results were then of the tests?

A. Well, the spec for the brake pressure is 4,000 psi. The impulse test runs at 1,450 psi and the pressures the pressures at the brake pressure switch in these tests were at about 1,200 psi maximum.

Q. There are three different graphs here on this particular document. You -- And the first one labeled Time History Data. Is the description you've provided basically a description of what's in the Time History Data chart?

A. Yes, it is.

Q. What about the second chart? It says Switch Pressure versus Antilock Pressure. What's depicted in that chart?

A. That depicts the -- a correlation between the pressure at -- at the anti-lock system versus the pressure that's observed at the brake pressure switch. One of the things that you can note there is that there's a knee in that curve at about 750 psi -- psi.

Q. By knee, you mean the direction and the -- and did style of the curve basically changes?

A. That's correct.

Q. Okay. What's the significance of that?

A. The significance of that is showing that the brake pressure switch is on the other side of the proportional valve from the main braking system; and also, that would be an indication as to our discussion yesterday on John Joyce's paper which he was assuming that the brake pressure switch was not on that side of the proportioning valve.

Q. He's the fellow that you referred to yesterday in answering Mr. Mayer's question about why the information or conclusions that he reached that he provided to you were not relied upon by you?

A. That's correct.

Q. And that had something to do with where the switch actually was as opposed to where he assumed it might be?

A. That's correct.

Q. And this chart confirms what with respect to that?

A. This would confirm that the -- the brake pressure switch as on the other side of the proportioning valve from where he was assuming.

Q. That's kind of another reason to disagree with what Mr. Joyce said to you --

A. That's correct.

Q. -- in this investigation? Okay. And then

the third chart is the switch voltage versus switch pressure?

A. That's correct.

Q. And what's that all about?

A. It's showing at what point the switch opens up as it's design should be and basically that at -- at around 130-psi it goes from a closed condition to an open position.

Q. And how does that help you gain an understanding as to whether the -- there's anything about the anti-lock brake system that might be involved in -- in posing an improper, unwanted load or -- or condition on the brake pressure switch?

A. We don't see that switch jumping back and forth and opening and closing during the anti-lock brake system event.

Q. Are the tests -- And this is just one of the tests that were run. There were other tests; is that right?

A. That's correct.

Q. The -- In the block down here in the lower right-hand corner says: Design Research Engineering. How did they -- How are they involved in any of this testing? I thought this done by Ford.

A. We provided them with the -- the data points that were part of this test and they plotted that.

Q. Design Engineering -- Research Engineering is a company that, Dr. Vogler is employed by?

A. I believe so, yes.

Q. And just for purposes of the record, you know Dr. Vogler?

A. I have met her twice, I believe.

Q. And she's one of the experts that's been retained in this case by Ford?

A. That's correct.

Q. Is this part of the information that -- that you relied upon as team leader to -- to arrive at the conclusion that the anti-lock brake system was not involved in the -- in the field circumstances that gave rise to the -- to the inquire from NHTSA?

A. This along with the data from subsequent model years when we were not experiencing brake pressure switch fires.

Q. And what was it about those subsequent model years, the data from the field, that further supported your conclusion that the anti-lock brake system was not a -- a factor in whatever was

occurring in the field that produced these fires?

A. They were using the same anti-lock brake system in the subsequent model years and the -- there were not the events associated with the brake pressure switch and as reported by Tom Masters.

Q. At any time during the course of the investigation, did the Texas Instruments ever inform you that they believed -- I mean -- And by "they" I mean the company, whoever might be representing the company -- that they believed that the switch that they supplied to Ford was experiencing some sort of an abusive environmental condition that was causing the switch to malfunction in an -- in an unwanted way as a result of the performance of the anti-lock brake system in the vehicle?

A. I believe there was some discussion along that -- those lines, which was one of the reasons -- one of the other reasons that we ran these tests.

Q. Were the results of these tests shared with Texas Instruments during the investigation?

A. I believe they were brought into a team meeting or two that we were discussed (sic.).

Q. And was that the end of the discussion as far as the anti-lock brake system was concerned?

A. I believe so, yes.

Q. Is there any information that you've been provided as -- you know, field experience, for example, since the issuance of the recall letter that has caused you to change your view that -- to rule out the ant-lock brake system as a factor in any of these conditions?

A. I -- I still believe that the anti-lock brake system is not a part -- is not a factor in this condition.

Q. Do you know of any test that's been done, that the results of which have been brought to your attention that shows that -- that the anti-lock brake system creates a pressure situation for the switch that exceeds the specifications -- the design specifications for the switch?

A. No, I don't.

Q. Okay. Okay. Let's take a look at Exhibit 43.

*MR. FEENEY:* Someone has the -- Someone's -- Someone's got the one with the sticker on it, which doesn't make any difference to me.

*MR. MAYER:* That's right. I don't have a copy.

*MR. FEENEY:* Okay. All right.

Q. I'll give you that one, Mr. Porter. We've marked now Exhibit -- as Exhibit 43 a documents that I don't suppose you've seen before, but it's styled Texas Instruments' Motion To Compel Ford Motor Company to Fully Answer Discovery. I just want to ask you some questions, sir, take you through some of this stuff.

*MR. MAYER:* Let me object. I think it's outside of the scope of the deposition.

*MR. FEENEY:* Okay.

Q. The -- I'd like to direct your attention to the first sentence of the last paragraph, sir. It says: "Although Ford's internal documents indicate that it did not know what was causing under hood fires in 1992 Lincoln Town Cars, Ford nonetheless issued a recall of T.I.'s switch in May, 1999. That's what it says, doesn't it?

A. That's correct.

Q. Now, do you agree with that statement, sir?

A. No, I do not.

Q. Would you please share for us for benefit of the ladies and gentlemen of the jury what your view is as to whether or not Ford had an understanding of the cause of the under hood fires

that were the subject of the recall?

A. Ford believes that the fires originated at the brake pressure switch. What we don't understand as far as a cause is to what manufacturing processes were involved with creating the short-lived diaphragms.

Q. The -- When you say that the fires originated at the brake pressure switch or might originate at the brake pressure switch on those cases that involved that sort of scenario, what is it that is required to occur within the brake pressure switch in order for there to be a fire in Ford's vehicle?

A. The -- The diaphragm of the brake pressure switch needs to allow brake fluid to pass from the braking system into the electronic components of the switch.

Q. Is -- Is that something that Ford understood by the time the recall letter was sent out?

A. Yes, it is.

Q. Had you seen evidence in switches of that that phenomenon actually occurring?

A. Yes, we did.

Q. Do you have any idea why T.I.'s lawyers

would tell the court in Mississippi that Ford did not know what was causing the fires and they recalled the part anyway?

A. No, I don't know why they would say that.

Q. Do you think that you issued a recall letter for a part that was a mistake?

A. No, I do not.

Q. This document, Exhibit 43, goes on to say on the next page: Ford's allegation -- I don't know that what means -- but Ford's allegation regarding T.I.'s switch is based solely upon statistics. Now -- And then they go on to say that there is no physical evidence that Texas Instruments' switches were defective. First of all, sir, do you agree that there is no physical evidence that Texas Instruments' switches were defect?

A. No, I do not.

Q. Do you agree that your -- the decision to recall was based solely upon statistics?

A. No, I do not.

Q. Now, I know you're not a lawyer. But does the term physical evidence mean something to you as the guy that headed up the investigation into this problem?

A. To me, physical evidence would be a piece

of material or hardware that would be involved.

Q. Like the Memphis switch, for example?

A. Exactly.

Q. And what is it that you saw in the Memphis switch that caused concern on your part that was -- constituted physical evidence of a defect in the switch?

A. The Kapton diaphragm was creased and perforated.

Q. And had it leaked?

A. And -- And did leak.

Q. And had you -- in -- in post-analysis, sort of after-the-fact analysis, did you find evidence of brake fluid in the electrical side of the connector?

A. Yes, we did.

Q. And you found some kind of means of it getting there through the membrane?

A. Exactly.

Q. Do you think that's physical evidence?

A. I would've thought that was physical evidence.

Q. In the course of the investigation, did you see other switches that had creases in them or holes or separations that allowed -- would've

allowed fluid to leak through them?

A. Yes, we did. In fact, every switch that we could identify as being part of a thermal event that -- that we could understand or see what the Kapton layer looked like was perforated and brake fluid had penetrated.

Q. And were the switches, at least through the -- the period of time of the investigation, were switches of this type made available for the Texas Instruments engineers that were working with you?

A. Yes, they were.

Q. Did they also have the opportunity to observe this physical evidence?

A. I believe they did.

Q. Can you explain to me why these engineers have got -- gotten -- have not gotten the word to Texas Instruments' lawyers that this physical evidence exists?

A. No, I can't.

Q. There's also a claim in here on this pleading in Page 3 that -- that -- there seems to be a suggestion that -- that the anti-lock brake systems and the traction control systems -- at least, Texas Instruments' lawyers seem to believe that they may have had something to do with the

recall. Now, first of all, the tack (sic.) -- the traction control, what is traction control? I know you're not a brake expert, but what -- or a handling expert. What is that?

A. Traction control is a method for keeping traction between the tires and the road surface during accelerations.

Q. All right. And how does that relate to anti-lock brake systems, two different systems?

A. Well, they're -- they're generally combined systems because they do use the anti-lock braking hydraulics.

Q. Okay. Well, in evaluating the anti-lock brake systems, were you also taking into consideration whether the traction control system had anything to do with degrading are compromising the performance of the brake pressure switch in any way?

A. Yes, we did.

Q. And how did you go about doing that?

A. It was similar to the tests that we did with the -- the panic stops.

Q. And the results were?

A. That there was no effect.

Q. And again, were those results shared with

Texas Instruments?

A. I believe so.

Q. And after the results were shared, was there any claim being advanced by the Texas Instruments engineers that Ford had blown these tests, hadn't gotten it right, it overlooked something and they ought to keep working on that part of the deal?

A. I don't recall that.

*MR. MAYER:* Let me just note that the document I have, this exhibit, refers to some -- some exhibits, which in my copy are not attached. So I would say at some point I think you should supplement fully.

*MR. FEENEY:* Yeah. I will. That Exhibit 4 -- Actually, you know what that is? That's a list of some -- That's a service bulletin that shows some various service repairs made to anti-lock brake systems. It's an index to service bulletins is what it is.

Q. And you're familiar with that?

A. Not really.

Q. Okay.

*MR. MAYER:* My -- My only request is that the original be supplemented at some --

*MR. FEENEY:* That's fine. I'll include that.

*MR. MAYER:* Okay.

Q. But here's my question: When -- When you did the tests on the anti-lock brake systems you were working on a -- you were working on a vehicle that was what it was. I mean, it was a 1992 Town Car?

A. That's correct.

Q. Okay. Are you familiar with the service history on the Campbell vehicle?

A. No, I'm not.

Q. Do you have any view whatsoever as to whether any of those service bulletins, that index to any of those service bulletins had anything to do with the performance of the anti-lock brake system insofar as it affects these pressures that are described here in this chart?

A. I'm not familiar with it.

Q. All right. Did anyone ever claim during the course of this investigation that there was something in the service history of the 1992 Lincoln Town Car that was unique or in some way involved with or explained why people were seeing fires develop in the area of the brake pressure switch?

A. There were some discussions as far as what -- what might happen under hood, but we didn't know how what -- how customers necessarily would use these vehicles. But, you know, I -- I guess it was generically those kinds of things.

Q. Is there anything -- I mean, did -- did anything pop up during the course of the investigation that pointed to some specific or discreet problem that was unique to the 1992 Town Car?

A. No, there wasn't.

Q. You mentioned under hood. For example, under hood temperatures in the '92 Town Car, any reason to believe they're any different than they are in the '96 Town Car, for example?

A. No.

Q. Or the '95?

A. No.

Q. Or the '94?

A. No.

Q. Or the '93?

A. No.

Q. This is all the same platform; isn't it?

A. It is?

Q. Now, there were changes. There were --

there was a platform change in '97 --

A. Right.

Q. -- Correct? But at least, insofar as the '92 through '96 models are concerned, it's all the same platform, right?

A. It's the same platform. There may have been some freshening changes along the way also.

Q. Sure. But would you -- Did you find any evidence during the course of your five-year -- of that five-year model run to indicate that there was any significant change in under hood temperatures --

A. No.

Q. -- in those -- in those vehicles? Now, I go on to Page 4 and here on Page 4 they do get into this 14-D. I mean, they say that -- they cite that 14-D thing and the Field Review Committee report and the statement that you made: A root cause of these under hood fires has not been conclusively identified. Right?

A. Yes.

Q. Now, when we talk about root cause in that context, what are we talking about?

A. I'm talking about the production process that led to the Kapton diaphragms becoming perforated.

Q. Did you mean to suggest by that statement that you didn't believe the brake fluid leaked through the Kapton membrane on some of these vehicles?

A. No, sir, I did not.

Q. At the time you wrote this document, was anyone disputing that?

A. No, they were not.

Q. It is -- It is true, I gather, that you did not understand at that time what it was about the manufacturing process that might have caused or led to that possibility?

A. That's correct. On your previous question --

Q. Yeah.

A. T.I. may have been disputing that -- that that was the cause of the fires.

Q. And -- And actually you -- I think you identified that yesterday or the day before. But did they dispute the fact that brake fluid could leak the membrane?

A. I don't believe they did.

Q. They may have disputed the cause, a cause of the fire; but did they ever dispute that brake fluid could leak through that membrane?

A. Not in -- Not in the Memphis switch.

Q. All right. Do you believe that an analysis of any of the documents pertaining to the anti-lock brake system or the traction control system on the 1993, 1992 Lincoln Town Cars or any other models of that platform would shed any light whatsoever on the question of the -- the defect in the switch that has led to some fires in the field?

A. I don't believe that it would.

Q. Why not?

A. As we discussed before, the -- the ABS and -- and traction control systems fell well within -- or -- or the pressures generated were well within the specification of the switch and that when those systems were operational they were not operating in the range at where the switch would be changing.

Q. Do you believe that an examination of everything conceivable receivable fire that has ever occurred in -- on a Lincoln Town Car, regardless of the model year, would shed any light on the question of why certain 1992 Lincoln Town Cars, Grand -- Gran Marquis and Crown Vics experienced fires in the brake pressure switch on the driver's side of the vehicle?

A. I can't imagine why that would be.

Q. And why is that?

A. It's -- What -- What -- What our focus was on was the brake pressure switch in particular. And we were able to show that there was a pattern of -- of fires associated with the brake pressure switch.

Q. Any of these other systems or other -- or these other events, did they -- did the -- did the systems remain essentially the same in the later model vehicles?

A. I can't say that for certain.

Q. That was the -- That was Masters group that compiled the statistics and looked at all that stuff; is that right?

A. That's correct.

Q. And do you know that Dr. Vogler has also examined that same information?

A. I have heard that, yes.

Q. And have you had a chance to look at any of the work she's done?

A. I have looked at some of the charts she's done, especially on the trend data.

Q. Is there anything in her work that is inconsistent with the analysis that was done by Ford in 1999?

A. No, there's not.

Q. I realize it might be more detailed or more involved or less detailed or less involved, but is there anything inconsistent?

A. I believe the conclusions are the same.

Q. Okay. I want to go back to -- I'd like to turn your attention now to Exhibit 24. I started asking you some questions about Exhibit 24 yesterday, but I didn't complete that. Do you have that in front of you, sir?

A. Yes, I do.

Q. Would you turn to the second page of that document?

A. (Witness complies.)

Q. Yesterday I asked you some questions about the cause of the crease mark and the statement about -- I think we talked about the wired -- the wire being hot all the time. But Let me ask you, sir, if you look up at the questions that are for T.I., the first question is: What are the flash points for all components materials used in the switch? Do you understand what that means?

A. I believe that's a reference to the -- the burning potential for the pieces in the switch.

Q. And why were you interested in that?

A. We were under -- trying to understand what parts of the switch might be a fuel in a fire.

Q. Okay. We talked a lot about brake fluid and -- but are -- There -- There are other combustible building materials within the switch --

A. Yes, there are.

Q. -- assuming a fire starts? Or they -- they may actually be the -- the initial material also?

A. Uh-huh.

Q. And you were interested in knowing the temperatures at which those materials would ignite?

A. Yes.

Q. Or vapors from those materials might ignite?

A. Or something to that effect.

Q. You were also asked the question -- or the question's asked here: Are the material specs submitted as to Ford the same materials specs used on the model year '92, '93 applications? Now, what was your thought process there?

A. During our -- our initial investigation we were asking, you know, what materials were in the switches. The specifications we received were dated sometime after the '92, '93 model year and we wanted

to know if it was the same material or if there had be some changes along the way.

Q. And why was that of interest to you?

A. If there were changes in what the -- what the material was, then that would indicate a change in the material properties.

Q. Now, the next question is the one I want to spend a little time on. It says: Does our DFMEA or PFMEA indentify any potential fire occurrences? Do you understand the reference to "our" here being the reference to T.I.'s DFMEA?

A. Since this is being written by a Texas Instrument representative, I would expect that that's referring to Texas Instruments.

Q. Tell the members of the jury, please, what the -- these acronyms stand for, these letters stand for, DFMEA and PFMEA.

A. The DFMEA stands for the Designed Failure Modes and Effects Analysis, which is a study done on the design of -- of a component. The PFMEA is the Process Failure Modes and Effects Analysis. And that's a related kind of study for a component, but taking it's particular manufacturing process into mind.

Q. And does a component supplier such as T.I.

do a -- Are they -- Do they do a T -- a DFMEA and a PFMEA on any component that they supply to Ford?

A. It is expected that a component supplier will do both of those -- both of those things.

Q. Now, is this a process that -- that Ford dictates or controls or is this something that's up to the T -- the supplier to do?

A. It's up to the supplier to do at -- and -- and Ford requires that of their suppliers to do that.

Q. And did you during the course of the investigation have the occasion to examine the DFMEA, the Design Failure Mode and Effects Analysis that Texas Instruments did for the switch in question?

A. We did examine a -- a DFMEA for the switch from Texas Instrument. I don't know at this point in time what the date was on that.

Q. All right. And I'm going to get copies of a portion of that. It's a big documents; isn't it?

A. It's a fairly large document

Q. I'm -- I've got -- There's one particular page --

*MR. MAYER:* I'm going to object to you putting in portions and not the full exhibit.

*MR. FEENEY:* I -- I'll supply the whole thing. I just don't happen to have it handy. And you're welcome to -- I'll get it for you at a break.

Q. The -- The -- There's a particular page that I'm interested in because the -- the DFMEA -- Let -- Let me ask you this: Does -- Is it broken down so that it actually looks at component parts of the component? I mean, I is it that detailed?

A. It -- Its intent is to look at the various pieces inside the component and understand what their effects maybe on the operation of the overall component.

Q. And did they -- And did it -- Did the DFMEA actually look at the potential failure modes for the diaphragm, the -- the Kapton membrane that was part of the switch?

A. I believe there was a section for that.

Q. And in this case it said -- the -- the DFMEA might refer to diaphragm. But do you understand that to be the same thing as the Kapton membrane that we've been talking about?

A. Yes.

Q. That would be the part of the switch that had the crease in it in the Memphis switch?

A. That is correct.

Q. I'd like to show you, subject to Mr. Mayer's objection --

*MR. FEENEY:* And I will at the break get the complete --

*MR. MAYER:* Okay.

*MR. FEENEY:* -- document and I'm happy to have that marked separately or why don't we -- attachment or we can even substitute.

*MR. MAYER:* Substitute. We'll call this DFMEA in place of this exhibit.

*MR. FEENEY:* We'll put -- We'll call this Exhibit 45. I think, 45; is that correct? And --

*MR. MAYER:* Thank you.

(Exhibit No. 45 marked.)

Q. I've marked as Exhibit 45 -- and we'll substitute the complete DFMEA -- but this is a portion of the DFMEA. Do you recognize it as such, sir?

A. Yes, sir.

Q. And just so that we gain an understanding of what we're looking at, if we look at the description under part, name, number and description, we see diaphragm and then there's some

numbers and it's says: Form flexible element of fluid -- forms flexible element of fluids containment cavity, transfers pressure from fluid to sensing elements. So that's really a description of what the diaphragm does?

A. That's correct.

Q. And it really performs two functions, does it's not?

A. (Witness nods head.)

Q. You have to say your answer.

A. Yes, does it.

Q. All right. Let's distinguish those two functions if we can. The first function has to do with the containment cavity. What -- Tell us about that, sir.

A. As part of the brake pressure switch, there's a -- a cavity that's formed by the hex port that screws into the proportioning valve on the Town Car and then the diaphragm is on the -- on the other side of that cavity. And it the area that the brake fluid is intended to be as part of the switch.

Q. And that actually, in the -- in the -- in the documents itself, that part where the brake fluid is is actually called a fluid containment cavity?

A. In this -- In this FMEA, correct.
Q. I mean, this DFMEA, in other words, the designer can see that part of the component as a containment cavity?
A. That's correct.
Q. Containment, meaning you don't want anything to get out of there?
A. Exactly.
Q. And is that one of the purposes of the diaphragm, that it forms the flexible element of the fluid containment cavity?
A. Yes, it is.
Q. And the so-called nonflexible elements would be the other walls of the cavity?
A. That would be correct.
Q. In this case, made of what, plastic?
A. I believe it's made of metal.
Q. Metal. Okay. So we've got metal on three sides and we've got the diaphragm on the other side?
A. I believe there's also a gasket.
Q. Gasket too. And there's probably a gasket -- The gasket's probably described in the DFMEA too?
A. I would think so, yes.
Q. All right. So one purpose is, it forms

part of the structure that's called the containment cavity?

A. That's correct.

Q. And its job is to keep the brake fluid in the from the cavity?

A. That's true.

Q. The other thing it says is: Transfers pressure from fluid to pressure sensing elements. What does that mean?

A. That means being able to take the pressure that's -- that could be generated on the fluid side and allow that to transfer into the mechanical side where the -- the decision, shall we say, on whether the switch is going to be open or closed occurs.

Q. All right. Now, the way this works is that you -- the designer identifies the part and then there's another column and it says: Potential failure mode. And typically what we see in there is what?

A. What we see there are what -- what modes would be associated with not performing the functions previously identified.

Q. Okay. And the -- Is there one or more than one failure mode identified for the diaphragm?

A. This -- This FMEA has three failure modes

identified.

Q. And what's the first failure mode?

A. Fail to contain fluid.

Q. Well, that's pretty basic?

A. That's pretty basic.

Q. That goes to this business of the fact that it's part of the fluid containment cavity?

A. That's correct.

Q. And if we go to the next category we see Potential Effects of Failure. And what are they?

A. Potential effects of failure are, if that failure mode occurs, what would we expect to happen. And in this case the expectation is that the brake fluid -- or there's brake fluid -- fluid leakage.

Q. Pretty basic?

A. Pretty basic.

Q. So if the part doesn't do its job, that means it would fail to contain fluid and there would be leakage?

A. That's correct.

Q. And the designer is basically laying this out as -- as what could happen; is that right?

A. He's laying this out to help him understand what his design alternatives are.

Q. All right. Now, the next column, it says:

SEV, period. Does that stand for severity?

A. Yes, it does.

Q. And there's a 9 underneath that?

A. That's correct.

Q. What is the scale that is the designer has available to him to rank the severity of a failure?

A. The scale is from 1 to 10, where 1 is the least severe and 10 is the most severe.

Q. What does a 9 rating mean to you, sir?

A. It's a very severe failure. And, in fact, our -- our processes indicate that we need to pay special attention to 9 and 10 ratings.

Q. Actually, I think it's described as Hazardous With Warning, doesn't it?

A. That's correct.

Q. Why would -- Why would -- And I think 10 is a Hazardous Without a Warning. Why would this be a Hazardous With A Warning?

A. What we learned is, of course, if there's brake fluid leakage, it could result in a fire.

Q. That sounds hazardous.

A. That sounds hazardous. The other thing that this could be is if brake fluid is leaking, then the brake fluid would escape from the brake system and leave the customer without braking

system.

Q. All right. That sounds hazardous too?

A. Yes, it does.

Q. What's the warning part? Why would this be 9er as opposed to a 10?

A. I believe that the -- the warning that's being indicated is that if the brake fluid drops to a certain point in the braking system, that the brake lamp will come on.

Q. Then there are a whole bunch of entries in the next category. It's called: Potential Causes Of Failure.

A. Yes.

Q. Do you see that?

A. Yes.

Q. And basically -- Again, typically, what do you typically -- what's the designer supposed to be doing in terms of filling out that cavity, typically?

A. He's thinking about what the -- what may be the reasons why that -- the -- the previous identified failure mode could happen.

Q. Why might you get a leak --

A. Correct.

Q. -- in this particular case? In one sense

it could be considered a brainstorming. Okay. And basically, is he supposed to put down there kind of every conceivable way that he can think of that there might be a leak?

A. That's correct.

Q. And if he thought he was supplying a part, for example, that would wear out before the life of the vehicle, might this be -- just through normal wear and tear, might this been a failure mode?

A. I would think so.

Q. Now, let's just go through what the designer of the parts that is involved here thought of. First thing he said was: Gradual rupture over life due to improper design of supporting elements. Does that sounds like normal wear and tear to you?

A. No, it doesn't. It sounds like a design problem.

Q. Can you figure out what he's talking about there in terms of the supporting elements?

A. I -- I believe that what you might consider supporting elements would be the various parts around the diaphragm that are in contact with the diaphragm.

Q. Okay. So he's just saying, if something goes haywire with one of the elements that's in

contact with the diaphragm, from a design standpoint, that could create a problem?

A. That is correct.

Q. All right. And -- And again, this is just a brainstorm; it doesn't mean that it's gofng to happen, right?

A. Correct.

Q. All right. But then the other brainstorm he's got is: Gradual rupture over life due to excessive flexure displacement. Now, that excessive stuff, what does that mean?

A. I think, more than expected. And since -- So that would be moving it a greater amount, a farther distance than -- than was anticipated in the design.

Q. Now, what's the reference to "life" mean, over life?

A. That would be the life of the vehicle, I would think.

Q. And what makes you say that?

A. Because there is no intended service to be made for this part.

Q. If -- If the designer was thinking that gradual rupture might occur over life due to normal flexure did displacement -- I mean, this part does

move over the life of the part, does it not?

A. That's correct.

Q. I mean, it moves everytime you apply the brakes?

A. That's right.

Q. So if the designer was thinking that it's going to leak just as a result of normal flexing over the life of the parts, would that be a separate and distinct failure mode?

A. I would think it would be.

Q. But that's not what this says, is it?

A. That's not what this says.

Q. The next one is: Gradual rupture over life due to stress concentrations caused asymmetric strain distribution. That's a lot of fancy words. What does that mean to you?

A. That means a possible rupture due to the way the piece of Kapton is being pulled or -- or pinched.

Q. Now, that sounds likes that might have something to do with actually what happened on the Memphis switch?

A. It sounds that way.

Q. I mean, if you assume that the crease as a result of a pinched Kapton?

A. That's correct.

Q. And so that was something where the designer saying, hey, if that happens, it could result in leakage?

A. That's correct.

Q. Again, is that a statements about just leaking due to normal flexing, wear and tear over the life of the part?

A. No. This would b as special case, I believe.

Q. Then it says: Chemical attack due to incorrect material specified. I mean, I guess that's the wrong Kapton; is that right, or the wrong brake fluid? I don't know. What is that about?

A. That's what I would assume, either picking the wrong Kapton.

Q. Any evidence at this point that would indicate that in any of the switches that were examined that the Kapton that was in the switch was anything other than what T.I. purchased or they thought they were buying?

A. I don't have that kind of information.

Q. Okay. But that would be a possibility -- that's the possible sort of failure mode that --

A. That's what they're brainstorming, yes.

Q. And then the other thing: Incorrect thickness for number of layers of diaphragm material. Again, some kind of a manufacturing anomaly where they just didn't get the right number of layers in there?

A. That's correct.

Q. And insufficient location clamping of the diaphragm. Again, a manufacturing sort of problem?

A. That's correct.

Q. Is there anywhere contained in any of this list of potential causes of failure the concept that the Kapton, if it's properly manufactured, if it's properly -- if the supporting elements are properly designed, any indication whatsoever that the Kapton, through flexure over time, is going to wear out and leak?

A. All of these appear to have special causes that would cause the Kapton to -- to leak. So to answer your question, there don't seem to be any -- any other cases here, no.

Q. And if the designer -- Now, first of all, was there any indication whatsoever here -- Going back to this question that was asked -- Does our DFMEA or PFMEA identify any potential fire occurrences, was there anything in the analysis of

these potential effects of failure, causes of the failure or anything like that where they identified a potential effect of fire?

A. No, they did not.

Q. I guess that answers that question with respect to DFMEA?

A. Yes.

Q. Now, the other stuff here that we have on the diaphragm, change in area of pressuring, transfer over life, what's that about?

A. I guess I'm not exactly sure what -- what that refers to in their mind. But they identify as one of the effects, that it would change the pressure at which -- the set point at which the switch would -- would change it's states.

Q. Is That a change that results in a leakage --

A. No, it is not.

Q. -- according there dia -- this diagram?

A. No, it is not.

Q. That says: Excessive change of pressure transfer area versus pressure down below. Is that right?

A. Correct.

Q. Is that something that they say would

result in a leakage?

A. No, it is not.

Q. So the only brake -- only leakage analysis that we see involving the diaphragm is what we've just gone over?

A. That's correct.

Q. Now, design verification is -- Well, actually I forgot. This is OCC -- We go back to potential causes of failure. It says: OCC. Do you see that?

A. That's correct.

Q. That's -- That stands for occurrence, doesn't it?

A. That's correct.

Q. And there we have a 1 --

A. Yes.

Q. -- is that right? Now, what does that mean?

A. Occurrence also has a 1 to 10 scale where -- where a 1 is the least common occurrence -- 10 is the most occurrence. A 1 indicates a less than 1 in 1.5 million cases of occurrence.

Q. Okay. And I have a document that will verify that. So the leakage potential -- I mean, there's old phrase, one in a million -- But in terms

of your -- the -- the scale ranking, it's really one in 1.5 million occurrences?

A. Or less than that.

Q. Less than that. So we have a -- We have a scenario which is hazardous, but ranked as unlikely?

A. That's correct.

Q. And again, by the designer of the switch?

A. That's correct.

Q. And in no event do we have a scenario identified which says there's going to be a leak as a result of normal wear and tear?

A. That's correct.

Q. Is it reasonable to assign a zero probability to that based upon this?

A. Well, in the FMEA mode there's a -- a zero probability is not one of the choices.

Q. Okay. But if it's not in there?

A. I guess that would be the case.

Q. Less than one in a 1.5 million, not even identified as a likely mode of failure; is that right?

A. That's correct.

Q. But there are a number of manufacturing snaffoos that are identified as potentially resulting in leakage?

A. That is correct.

Q. And the design ver -- verification for all this is the burst impulse and thermal cycle tests, material manufacturing recommendations and comparison of design with similar simple products; is that right?

A. That's right.

Q. Now, do you suppose that T.I. actually went out and compared their design with similar products?

A. I think they may have compared it with similar Texas Instrument products.

Q. Do you know that?

A. No, I do not.

Q. Do you know what products they compared it to?

A. No, I do not.

Q. Remember, I was asking you yesterday about the responsibilities of a Q-1 supplier, how they might go out and inform themselves of what is being done in the industry and how their products compare with what's being down?

A. That's correct.

Q. Do you think that that might be some indication that perhaps they actually were doing

that?

A. Yes.

Q. And there's nothing wrong with that, right?

A. Correct.

Q. I mean, that's what you'd expected them to do --

A. That's correct.

(Exhibit No. 46 marked.)

Q. -- right? Okay. Exhibit 46 is that chart that I was telling you about, you and I were discussing?

A. Yes.

Q. And that particular document --

MR. MAYER: Has that been produced?

Q. -- explains --

MR. FEENEY: I don't know.

MR. MAYER: Has not been produced prior to today?

MR. FEENEY: No.

MR. MAYER: Well, I would object to it being used.

MR. FEENEY: Okay.

Q. Where do you suppose T.I. got that ranking of 1?

A. They probably got it from the DFM -- or the FMEA manual that either they have of their own or they got from Ford Motor Company.

Q. Do you suppose that they had that ranking in their possession in 1989 when they filled this thing out?

A. Well, the date on this is 1992, but --

Q. '92?

A. Yes.

Q. Okay.

*MR. MAYER:* My date's 1998.

*MR. FEENEY:* Yeah.

Q. Well, do you think the 1 has changed any?

A. In upper left-hand corner is says February 7th, 1992 of -- of the FMEA -- of the FMEA.

*MR. MAYER:* Well, he's asking you about a different exhibit now.

Q. Yeah. Do you think -- Do you think that that rank order has changed over the years?

A. No, it has not.

Q. Do you think that 1 meant something different in 1992?

A. No.

Q. Do you think it would be responsible for T.I. to fill out a DFMEA in 1992 and put down a 1

for an occurrence rating without knowing what that meant?

A. No, I do not.

Q. In your experience, do Q-1 suppliers do that sort of thing?

A. No, they did not.

Q. Do you suppose it would come as a surprise to the guy that filled this out, if I were to point -- if you were to hand him that chart today and say, hey, that 1 meant one in 1.5 million?

A. I don't think it would.

Q. Do you think that Mr. Mayer is truly surprised by this document?

A. No, I do not.

*MR. MAYER:* All my objections are reserved. I just wanted you to know that. Don't let my silence be taken as anything other I'm simply.

*MR. FEENEY:* Okay.

*MR. MAYER:* Abiding by that --

*MR. FEENEY:* All right. Okay. Fine. That's fine.

*MR. MAYER:* -- stipulation that we have, that all my objections are reserved.

Q. Now, let's get back to -- Let's get back

to this. The design verification, burst impulse and thermal cycle test; now, looking at these design verifications, does -- I mean, do you interpret that as somehow a -- a bulletproof guarantee that there isn't going to be a manufacturing anomaly that's going to lead to leakage?

A. Given the light of what we know that was going on at Texas Instruments in 1991 and '92, and their concerns over the -- the diaphragm opening up, allowing brake fluid to get through, first of all, I don't think the design specification should've been considered the only verification for that.

Q. Why not?

A. Because those were minimum tests. And given that there was a problem identified during the design process, one would want to make sure that they had a design fix in place that -- that fixed the problem. Also, with respect to that and given that this is a February, 1992 document, I'm kind of surprised that they rated the occurrence as a 1, since they were having problems with the life of the diaphragm.

Q. Matter of fact, around about February of 1992, by that time, had their own internal documents identified the fact that they had gotten switches to

pass that were leaking?

A. That's correct.

Q. So the design -- relying on the design verification of passing an impulse test when you know you've got leaks, does that seem to be a reasonably prudent course of action?

A. No, it doesn't.

Q. And -- And is it true that it is documented in their own records that they had leaks and passes by February of 1992?

A. I believe they did.

Q. We'll get to those later. Now, going back here to Exhibit 24 there's this reference to: Has our IP testing showed any failures or concerns? Confirm IP testing results. And would the IP be a reference to impulse testing?

A. I believe, in this case the IP would refer to in-process testing.

Q. In-process testing. Okay. And what's that?

A. It's part of the production process. A certain number of samples of -- of a component are taken out and tested for -- for their conformance to specification.

Q. And did T.I. report to you at some point

in the investigation that, no, the in-process testing didn't show any concerns?

A. They -- They reported a summary that there were no concerns with in-process testing.

Q. And this was a summary. Did they ever show any underlying data for that summary for those tests?

A. No, they did not.

Q. Ever give you any underlying data for those tests?

A. No, they did not.

Q. And basically, the summary said, in essence, tested this part and passed?

A. I believe it said: Tested, five parts passed.

Q. The -- When they reported that information to you as part of the investigation, did they tell you that, in fact, they had gotten passes with parts that were leaking?

A. They did not indicate that, no.

Q. Okay. Let's move on to another document here.

*MR. MAYER:* When you come to a convenient stop, it's fine.

*MR. FEENEY:* Fine.

*MR. MAYER:* I wouldn't mind taking a lunch break. I've got a call I'd like to do a little before noon and then I'd -- then I'd like to just grab lunch.

*MR. FEENEY:* Okay. What's your pleasure? I mean, I can -- I'm going on to another document. We can -- We can go there or we can stop or -- I don't care. Whatever you guys want to do.

*MR. MAYER:* I'll -- I'll leave it up to the table. Let's go off the record.

*THE VIDEOGRAPHER:* Off the record. The time is 11:33:05.

(Recess taken.)

*THE VIDEOGRAPHER:* Back on the record. The time is 11:43:37.

*Q.* Let me direct your attention to Exhibit 25, Mr. Porter. You were asked some questions about this paper yesterday. And I'd like to just -- if you will, turn to the second page of that document. It's dated February 8, 1999 and apparently this is an E-Mail or a letter of some kind from Mr. Beringhause you to?

*A.* That's correct.

*Q.* And you were asked some questions about this. I just want to go over this again. This was

a document that Mr. Beringhause was forwarding to you as the investigation was going on?

A. That's correct.

Q. And he's talking about this idea of a relay circuit. And there's been a lot of discussion about that, correct?

A. That's correct.

Q. Okay. And if you skip to the -- to the -- If you go through the document, he says: As we discussed over the phone Friday, per your request, we looked at the possibilities of adding a fuse line -- fuse in-line with the pressure switch. However, we think a more appropriate solution might be to use a relay circuit. And schematic attached. And you talked about that yesterday and, indeed, you did discuss with T.I. the possibility of a relay circuit --

A. That's correct.

Q. -- is that correct? And he goes on to say: Our understanding of the application is that the brake pressure switch is a failsafe component to shut off the cruise control if the standard brake light switch fails. And is that true? I mean, is that basically what the purpose of the switch is?

A. That's correct.

Q. And you go on to say that -- He goes on to say: The brake switch, therefore, only needs to be powered when the cruise control is on. Now, in terms of shutting off the cruise control, if did standards brake light switch fails, is that statements true so far as it goes?

A. So far it goes.

Q. Okay. Could you elaborate on that?

A. Well, if -- if cruise control is not engaged, then power does not need to be applied to the cruise control system for the -- for the operating period that that's going on. However, when you look at the failure modes of the overall system and what -- what you need to do for the system failure modes, then what you find is that you need to have that -- the cruise control clutch coil circuit powered by the same power as the -- the brake lamp switch.

Q. And why is that?

A. As we were trying to explain yesterday, if the brake lamp switch were to fail or -- or if the fuse to the brake lamp switch were -- were to fail, then you would not be able to detect -- or would not be able to shut off the -- the power to the cruise control or -- or that would also shut off the power

to the cruise control and then you wouldn't have the problem with the brake lamp -- brake lamp switch failing.

Q. All right. So can you -- I mean, this -- this to me -- I'm not an electrical engineer and this all gets fairly complicated to me. In simple terms that perhaps someone with not an electrical engineering background can understand, can you explain to me and to the members of the jury what the disadvantage is to introducing a relay circuit that would shut off power to the switch under the circumstances described in this proposal?

A. To introduce a relay circuit to shut off the power to the switch as -- as a recall action as -- as defined here would lead to the potential for a miswiring, first of all, of the switch in -- into the system, and so it may not even be as effective as expected.

Q. That's the field problem, the field installation problem --

A. A field installation.

Q. -- we talked about yesterday? What else?

A. Also, even if it is installed correctly, since it would be breaking into the insulation of -- of the wiring, that would offer an opportunity

for -- for another failure mode of that and possibly rendering the brake lamp system inoperative or certainly the speed control system inoperative.

Q. And why was the -- When -- The way it was done originally, as part fortunate original design, just tell us again in the context of what you just said then, why was it done the way it was done in the first place?

A. The way it was done in the first place was to make sure that with a switch that was operating as designed, that the failure modes that -- that were predicted by the -- the various components of the speed control system could be overcome and meet the customer's expectations.

Q. If there's no brake fluid leaking through the membrane, is there any reason to have the relay?

A. No, there is not.

Q. This document says that: By placing a normally open relay in the circuit and only closing the relay, when the cruise control is activated the switch will only be powered when it needs to be when the cruise control is enabled. Again, is that true so far it goes?

A. So far it goes.

Q. If you are correct that the high current

draws the source of ignition, a relay would be a better solution than an in-line fuse because the relay prevents the high current situation from happening rather that reacting once it does occur. Let me ask it to you this way: In the absence of a fluid corroding the switch and/or igniting, is there any reason to shut off power to the switch?

A. No, there's not.

Q. And was there any intent on the part of tha -- Was there any design intent or design concept in the switch that contemplated that brake fluid would leak through the membrane out of the fluid containment cavity into the electrical side of the switch under any circumstance other than a manufacturing or design anomaly in the switch, question mark?

A. The DFMA -- The DFMEA only identified design anomalies that would cause the diaphragm to leak brake fluid.

Q. So if a relay were included in the recall fix -- I mean, forget about all the field service problems -- but if that were done, is it correct to say that the only reason to do it would be to mask a manufacturing defect?

A. That's correct.

MR. MAYER: I need to break and go do my conference call.

MR. FEENEY: I think I am done with that document.

THE VIDEOGRAPHER: Off -- Off the record. The time is 11:52:15.

(Lunch recess taken.)

THE VIDEOGRAPHER: Back on the record. The time is 1:19:59.

MR. MAYER: May I have the same continuing objection?

MR. FEENEY: You may.

MR. MAYER: All right.

Q. Mr. Porter --

MR. FEENEY: Let's see. We should probably just note for the records that we've now added all of the attachments to the document that we marked as Exhibit 43 and incorporated them as part of the original exhibit.

MR. MAYER: That's correct.

MR. FEENEY: And -- And I'm also going to, in the spirit of cooperation and the interest of promoting harmony among all counsel, to eliminate all disputes might possibly arise, I'm withdrawing my object to the video taping.

Q. Now, Mr. Mayer had an excellent suggestion earlier, that he quite correctly raised a question about the completeness of the DFMEA that I was using, Exhibit 45. Mr. Porter, could you get Exhibit 45 out?

A. (Witness complies.)

Q. Do you have that in front of you?

A. Yes, I do.

Q. I'm going to marked as Exhibit 47, I guess?

*THE COURT REPORTER:* 6.

*MR. MAYER:* It's -- This one's 46.

*THE COURT REPORTER:* Oh, sorry.

*MR. FEENEY:* Okay. So we're on -- Let me make sure.

*MR. MAYER:* Is 45 one of the pages in the new exhibit?

*MR. FEENEY:* One of -- It's -- Well, we'll get to that.

*MR. MAYER:* Okay.

*MR. FEENEY:* I'm trying to sort through this. I mean, there's a lot of paper here, Mr. Mayer, and I'm not -- I'm not necessarily a paper guy, so I've got to make sure I follow this. Okay. I think that we have here the -- Yes. Okay.

Now, we've got the DFMEA dated 9-30-91, which I'm going to mark as Exhibit 47. I'm going to show that to the witness and I've got extra copies of that one. Here.

(Exhibit No. 47 marked.)

Q. And Mr. Porter, in your review of the -- of the -- of the documents, have you been able -- First of all, I mean, I've given you Exhibit 47, right?

A. That's correct.

Q. And that's the DFMEA pertaining to the pressure switch which bears the date 9-30-91; is that right?

A. That's correct.

Q. And this one shows that it's prepared by Stephen B. Offiler, right?

A. That's correct.

Q. And how many pages are there for that document?

A. On the front page here, it says 1 of 6.

Q. Okay. And in that particular document, do we find a reference to the diaphragm for the switch?

A. Yes, sir, we do.

Q. Okay. And is that on Page 2?

A. Yes, it is.

Q. And does it -- Is it the next to last component from the bottom of the page?

A. Yes, it is.

Q. It says: Diaphragm (74176); is that right?

A. That's correct.

Q. And do you know that to be the Kapton membrane that is in -- that forms the flexible element of the fluid containment cavity?

A. I don't know that to be the case. But in the context of tis FMEA it would seem to be that.

Q. Well, right below it it says: Forms flexible element of fluid containment cavity?

A. That's correct.

Q. All right. So that sounds like we're talking about the same part?

A. Yes.

Q. And the potential failure mode reported or identified on 9-30-91 by Mr. Offiler was what?

A. Insufficient material properties.

Q. Now, do you have Exhibit 45 in front of you?

A. Yes, I do.

Q. Have you had an opportunity to compare Exhibit 45 to Exhibit 46?

A. Yes, I have.

Q. What was the potential failure mode shown in Exhibit 45 for this same part?

A. There were three potential failure modes. One was: Failed to contain fluid, one was to change area of pressure transfer over life; and the third was excessive change of pressure transfer area versus pressure.

Q. And were any of them insufficient material properties?

A. No, they were not.

Q. All right. And what is the dates of Exhibit 45? Did that come before or after what we're looking at here, Exhibit 47?

A. Exhibit 45 is dated after Exhibit 47.

Q. And it says: REV. Revised or revision?

A. Exhibit 45?

Q. Yeah.

A. It does say: REV. It looks like there may be a 1 or something after that.

Q. Hard to tell with this copy?

A. Correct.

Q. Let's not -- Just as -- But we can read REV?

A. Yes.

Q. And it's dated February, '92 --
A. Yes.
Q. February 7th? And this one is just prepared by Texas Instruments; not Mr. Offiler, right?
A. That's what it says.
Q. Okay. So the failure mode is different. And let's go back now to Exhibit 47. The potential effect of failure is identified as reduced live, leading to leak, right?
A. That's correct.
Q. Now, interpret this for me. What -- What is this document saying?
A. This is saying that one of the potential effects of -- of the failure is that the diaphragm would have a reduced live, leading to a leak.
Q. And what is the cause of the failure as identified in Exhibit 47?
A. It states: Supplier error.
Q. And explain that to me.
A. It would -- Sounds like they're thinking that the material that would be supplied to Texas Instrument was incorrectly supplied.
Q. And what's the design verification?
A. Material certification.

Q. Now, let me gets this -- And -- And the -- And the -- And the -- And the severity is still a 9; is that right?

A. That's correct.

Q. And the occurrence is what, a 1?

A. They have the occurrence as a 1.

Q. Okay. So let me get this straight. What they were staying in September of 1991 was, as to the diaphragm, the only potential failure mode that was identified was the possibility that the wrong material was -- would be supplied by the vendor; and that might reduce live, leading to a leak? Do I have that right?

A. That's correct.

Q. And they said, well, just order the right stuff, right? I mean, that's the material certification?

A. Well, I guess, from an engineering viewpoint, I would think that they were going to be testing this stuff as it came in the door.

Q. Okay. So that's as of September, 1991. Now, that's two years after development --

A. Well, it was --

Q. -- started?

A. After development started, correct.

Q. Does this suggest that at this point in T.I. felt pretty confident about the integrity of this switch and the ability to hold up over time?

A. I would think so, yes.

Q. And in -- at least, in particular, the diaphragm?

A. Yes.

Q. The only way it's ever going to have a problem is if they don't have the right stuff in there?

A. That's correct.

Q. Then we get to February of 1992. That's Exhibit 45?

A. Yes.

Q. And it says it's just Page 1 of 1, right?

A. That's correct.

Q. All right. And here we've already gone over all this. But now there's a whole bunch of potential failures involving leakage which pertain to apparent manufacturing anomalies?

A. That's correct.

Q. Now, based upon your review of the documents that have been supplied by T.I. in this and other cases, can you offer any explanation as to what, if anything, happened between September of

1991 and February of 1992 that might've led T.I. to change the potential failure modes for the diaphragm?

A. I think that it's the experiences that they were having during testing of the diaphragm not passing the impulse test.

Q. Well, but the failure mode, I don't know about that, Mr. Porter; because the failure mode says: Design verification, burst impulse and thermal cycle test. So they're relying upon the impulse test. That can't be it.

A. I'm not sure what it would mean then.

Q. Well, in the occurrence it's the same as it was before; the occurrence is a 1. It's not going to happen. It's one in a million.

A. Well, as stated before, it was a little bit surprising that they would've come up with that occurrence.

Q. Now, is there anything filled in on that recommended action section for Exhibit 45 -- I mean, Exhibit 47?

A. No, there is not.

Q. Is there something filled in on Exhibit 45?

A. Yes, there is.

Q. What -- Can you read that, please?

A. Note that the OCC rating of 1 is based on a large amount of field experience on similar products rather that extremely stringent ES requirements.

Q. Now, that's kind of a curious statement. What does that mean to you?

A. It sounds like they think the engineering specification is extremely stringent.

Q. Uh-huh. And it sounds like they've had terrific field experience with some similar products out there?

A. Yes, it does.

Q. Do you know what Ford did not know in February of 1992, which was that T.I. was actually getting leakers when they were doing tests to meet ES requirements during the time frame between August and February of 1992?

A. Yes.

Q. Do you suppose T.I. knew that when they revised this Fairly Mode Effects Analysis.

A. I would speculate that they did.

Q. Do you see any indication in any of the documents that T.I. shared that knowledge with Ford during this critical time period?

A. No, I do not.

Q. Have you found any other revisions or amendments to the Design Failure Mode and Effects Analysis pertaining to the diaphragm as we've searched during the lunch to try to comply with Mr. Mayer's request that we get a complete document in front of us?

A. No, I have not.

Q. Well, I found this one (Indicating) and I don't know what this is. I mean, we haven't talked about process specs -- This -- We've -- The process spec, would that pertain to the diaphragm at all?

A. It could.

Q. Okay. Have you had an opportunity -- Just in the interest of the completeness, we may as well just get the process spec identified so we know what that is. I'll mark this as exhibit 48 and I'll pass one of those around.

(Exhibit No. 48 marked.)

Q. This one is dated 4-29-96 and seems to be complete. And there's another one earlier than that which is dated -- Well, that's 47. But let me just get this one. What's 48, sir?

A. It appears to be a potential Failure Modes and Effects Analysis for the process. As you

stated, dated April 29th, 1996, prepared by Matt Sellers.

Q. Okay. And again, just for the interest of completeness, is there -- have you had an opportunity to see whether there's anything in here that pertains specifically to the diaphragm?

A. I don't recall that there is.

Q. Okay. Now, go back to Exhibit 47, if you will, for just a minute and if you'll go over to Page -- Looks like it'd be Page 5 of Exhibit 47. Now, again, this is the Design Failure Mode and Effects Analysis from the September, '91 time frame?

A. That's correct.

Q. Okay. Go down there -- Do you have on your page an entry for CUP-27288 and 27713?

A. Yes, I do.

Q. And what -- what is that part?

A. That's one of internal parts to the brake pressure switch that -- that holds -- it helps holds it together.

Q. Okay. And the potential failure mode there is: The crimp area geometry is incorrect --

A. Yes, that's one of them.

Q. -- or wrong material thickness or wrong material and so on and so forth, it's all laid out

there?

A. Correct.

Q. Now, crimp pressure -- crimp area geometry is incorrect. The potential failure is identified as poor crimped leads to reduce proof burst capability, reduced diaphragm life. Is that -- Do I have that right?

A. That's what it says, yes.

Q. And is there a -- a severity assigned to that?

A. Yes, there is.

Q. And what is that?

A. 5.

Q. Does this -- According to this -- this Failure Mode and Effects Analysis, is this the supposed to result in a leak?

A. Yes, it -- it does.

Q. Where's that?

A. From the reduced diaphragm life.

Q. Does it say it's going to leak?

A. No, it doesn't.

Q. I thought you were supposed to identify what the effect of the failure is?

A. I would've expected so also.

Q. So would I be correct in interpreting this

as saying that even if you have a bad manufacturing process, they don't think it's going to leak?

A. I guess so.

Q. And you get incorrect pinch-off as a potential cause of the failure. That's like a pinched cap -- a pinched cup or something?

A. I'm not exactly sure what that refers to.

Q. What's being pinched? Is the Kapton being pinched or the cup being pinched or what?

A. Well, the Kapton would be part of what's being pinched.

Q. But for whatever the reason, they don't even think they're going to get a leak as a result of this?

A. Correct.

Q. Okay.

A. Could I point something else out?

Q. Uh-huh.

A. I guess if they thought they were going to get a leak, they would've rated the severity of this as a 9 --

Q. Sure.

A. -- to be consistent with the DFMEA.

Q. Yeah. Okay. So apparently there are some things that they can do in the manufacturing process

that would reduce diaphragm life, but aren't even going to result in a leak?

A. I guess so.

Q. Even thought it's an anomaly?

A. Yeah.

Q. The -- Now, is the gasket addressed in the -- in Exhibit 47? Yes, it is. Right above the diaphragm, correct?

*MR. MAYER:* Let me just say that I'm not raising any objections pursuant to our agreement, but if he'd just answer his own question.

*MR. FEENEY:* Yeah. That wasn't a question. I'll restate the question.

*MR. MAYER:* Yeah.

Q. Is the gasket addressed in Exhibit 47?

*MR. MAYER:* I -- I'm -- What I'm saying, I am not making any objection.

*MR. FEENEY:* I know. And I'm working very hard to --

*MR. MAYER:* And I've agreed to --

*MR. FEENEY:* -- to ask non-objectionable questions.

*MR. MAYER:* All right.

A. Yes, it is.

*MR. MAYER:* They reserved and we go.

Q. Okay. And where is it referred to?
A. It's referred to on Page 2 right above the diaphragm.
Q. And are you referring to the entry that reads: Gasket (74353)?
A. Yes.
Q. And what is the stated purpose of the gasket?
A. To provide a fluid seal between the hex port and the diaphragm.
Q. Now, in any of the investigations that have been done regarding the potential for under hood fires emanating from the brake pressure switch that were the subject of the recall -- the NHTSA inquiry and the recall, has the gasket been identified as a potential components that's been involved in any of those?
A. During the investigation, no, it was not.
Q. Anybody make any comments or make any suggestions, anybody, that suggested there may be a problem with the gasket?
A. No, there was not.
Q. Since the investigation was concluded, have you come to learn through reviewing any materials that there may have been some

manufacturing problems with gasket?

A. Yes, there have.

Q. Tell me about that.

A. In the Highlights dated August, 1992, there is a description that the gasket * placement -- or gasket test equipment could only identify gross misplacements of the gasket and that small misplacements wouldn't be identified. Small misplacements of the gasket would result in reduced diaphragm life. And in August of 1992, they stated that they had made some change to correct that.

Q. And can reduced diaphragm life be associated with potential increased potential for leakage?

A. If reduced diaphragm life means a crack, allowing for leak, then yes, it would be increased likelihood of fire.

Q. All right. And in the potential effects of the failure -- Going back to Exhibit 48 -- were the potential effects of the failure -- They're all enumerated there -- were all of these basically manufacturing -- potentially manufacturing problems or basically improper sizing of materials type problems? Just take a look at them.

A. They appear to be manufacturing type

problems.

Q. Again, was there any contemplation according to this document that the gasket could simply wear out over time, thereby compromising the integrity of the seal --

A. No.

Q. -- in the Absence of any sort of a manufacturing anomaly or a material specification problem?

A. No, there is not.

Q. And, in fact, the potential causes, again, were basically what, improperly setup cutting tools, wrong extrusion tools, are these manufacturing issues?

A. These appear to be manufacturing type functions.

Q. All right. Have you, in your review, seen any other Design Failure Mode and Effects Analyses other than the ones we've identified, versions of them?

A. Not that I recall.

Q. Okay. Let me show you something that I just a question about. I --

(Exhibit No. 49 marked.)

Q. Maybe you can help me out. I don't know.

I'd like to hand you a document, Exhibit 49. And have you seen this document before?

A. Yes, I have.

Q. And during the period of time that you were conducting the investigation, was one of your concerns obtaining any data that you might be able to obtain concerning the potential corrosive effect that brake fluid had on Kapton?

A. Yes. We were concerned that brake fluid might be one of factors that was causing the Kapton to crack.

Q. Again, I mean, this is in the nature of this sort of brainstorming, look at everything kind of thing, right?

A. That's correct.

Q. And so did you ask T.I. for information about that?

A. Yes, we did.

Q. And Exhibit 49, do you see that this is a response from DuPont to an inquiry from T.I.?

A. That appears to be the case, yes.

Q. And what do they say -- What does DuPont say about any information they may have on this issue, according to Exhibit 49?

A. They say: Dear Brian, I have checked our

records and have not found any test data on Kapton FN type film and brake fluid exposure in our files. I have also spoken to several colleagues and we are unaware of any issues with the Kapton FN that has been used in automotive diaphragms. Sorry we cannot be of more help. If you have in any questions please call.

Q. Basically, they're saying, we don't have any data, but we don't know of any problems?

A. Correct.

Q. And was this information communicated to Ford during the course of the investigation by T.I.?

A. I believe it may have been.

Q. All right. And after receiving that type of information, did you basically quit thinking about the possibility that the brake fluid was somehow doing something to the Kapton membrane to enhance or speed up degradation?

A. Well, at this point in time I would still have been concerned since there was no specific data resulting in that. However, as our field analysis continued to build up and we learned that other applications were not experiencing fires, that allayed our fears.

Q. And is this -- Is this the kind of

information, that is to say, the effect of brake fluid on the material that's going to be the barrier -- sort of the last line of defense, if you will, in the fluid containment cavity -- is this the type of information that you would've expected Q-1 supplier to be seeking from its vendor in 1991 or earlier?

A. I would've expected there to be data at that point in time that said they had material compatibility, yes.

Q. Well, maybe this Kapton is just so good that in the absence of a manufacturing problem, it'll never leak?

A. I don't know that.

Q. One might that impression, reading the information supplied by T.I., right?

A. You might get that impression.

(Exhibit No. 50 marked.)

Q. Exhibits 50 is a document I've put in front of you that is a --

A. Excuse me. You haven't put it in front of me.

Q. Exhibit 50 is a document that I've now put in front of you, Mr. Porter, that you're familiar with. Tell me what it is.

A. This appears to be a page out of a Town Car shop manual for the speed control system. It identifies the -- the electrical wiring diagrams that would be part of the speed control system.

Q. And what -- what is the particular year of that shop manual?

A. This is dated July, 1992.

Q. July, 1992?

A. Correct.

Q. And so that would pertain to the '92 the Town Car?

A. Yes, it would.

Q. And what does that -- Where did you get that particular -- that -- Where did you get that copy of that document?

A. The copy of this documents came from Texas Instrument. I need to revise the previous answer though. It does say this is for the 1993 Town Car.

Q. You know, I -- when you said July, '92, I know that you probably misspoke. And this is for the '93 model year?

A. That's correct.

Q. Okay. And in this particular diagram for the 1993 Town Car, what does it reveal with regard to the issue of whether this switch is wired hot at

all times?

A. There's a hand notation that says: Hot at all times, next to the -- the device that's identified as the fuse panel and the wires that go to the deactivator switch, N-dot, C-dot.

Q. Okay. Now, that particular handwritten notation, did you put that on there?

A. No, I did not.

Q. Do you know who put it on there?

A. No, I do not.

Q. Was it on there when you first saw the document when it was received from T.I. --

A. Yes, it was.

Q. -- prior to the litigation?

A. Yes, it was.

Q. Do you know who put on it there?

A. No, I do not.

Q. Could you tell from the review of the document in the absence of that notation that the switch is wired hot at all times?

A. In the absence of that notation, there's no indication that the switch is anything other than hot at all times.

Q. And why do you say that?

A. Because it goes directly to the fuse

panel. It does not go to the ignition switch, as an example.

Q. This is sort of like that earlier exhibit that we were talking about, that schematic that was -- T.I. had back in 1989?

A. Yes.

Q. And this was for the '93 Town Car. Now, we were talking about '92 Town Cars, so maybe this doesn't -- maybe they made a change from '92 to '93?

A. No, theres was no changes between '92 and '93.

Q. How about from '93 to the '94?

A. There was no change then.

Q. Or '95?

A. Or '95.

Q. Or '96.

A. Or into '96.

Q. Are you telling me that T.I. supplied a switch that was hot wired for five model years?

A. That's correct.

Q. And that was revealed in shop manuals for those models?

A. Yes.

Q. Okay. Let's -- Let's go through some items that would be of interest -- might be of

interest. Have -- You've made reference from time to time in your testimony, Mr. Porter, to the so-called Highlights that were provided to you at some point during the course of discovery, have you not?

A. That's correct.

Q. And Highlights, what are these documents? We're going to go through a number of them now.

A. My understanding is, they were a group of -- of notes or a diary that the design engineer for the brake pressure switch was keeping for his own records as well as distribution to other people at his company.

Q. Okay. And the design engineer was who?

A. Stephen Offiler.

Q. And Mr. Offiler worked for whom?

A. Texas Instruments.

(Exhibit No. 51 marked.)

Q. Now, I need to get sort of lined up here so that I can -- because everybody's going to want a copy of these as we go through them. So I want to make sure I can do this kind of quickly without a lot of inefficiency. Let Me show you what I've marked as Exhibit 51. Is this one of the Highlights, sir?

A. Yes, it is.
Q. This particular one is dated what?
A. March 3rd, 1989.
Q. That would be based on your review pretty early in the sequence?
A. Yes, it would be.
*MR. FEENEY:* Now, I just want to tell everyone at the outset that I should probably note that a couple of these are going to have some handwriting on them and I take responsibility for that and I'll supply -- we'll just supply clean copies of these things as exhibits. I'm not suggesting that -- that any of this was on the original document and these are basically notes that I've made along the way. So ignore the all the handwriting and everything else.
*MR. MAYER:* I don't have any problem as long as --
*MR. FEENEY:* If that's okay.
*MR. MAYER:* I don't have any problem as long as you substitute a clean copy --
*MR. FEENEY:* I will.
*MR. MAYER:* -- at the end of today's session.
*MR. FEENEY:* I'll -- I'll do

everything I can do to -- to get that accomplished by the end of the day. We might have to wait until our conference call next Tuesday. I don't know.

Q. Anyway, March 3rd, 1989; and I just direct your attention to this paragraph down here where it says: Short circuit. Do you see that, sir?

A. Yes, I do.

Q. And it makes a reference to this Gary Klingler guy. And you've talked about Mr. Klingler before, right?

A. That's correct.

Q. This says: Gary Klingler raised a concern about the possible damage to our device if a sort circuit were to take place, whereby our device would pass a fairly large current, magnitude TBD, to be determined, right?

A. That's what I believe that to mean.

Q. And he goes on to say: Joe has requested us to take a look at this and draft a one-page abbreviated FMEA. Now, have we gone through the Design Failure Mode and Effects Analysis?

A. Yes, we have.

Q. Have you seen anything in Exhibit -- in the exhibits that we've reviewed so far that you would identify as a-one page or any kind of an

abbreviated FMEA that deals with this short circuit question?

A. No, I haven't.

Q. There's also a reference to the connector up here in the -- right above that. Do you see that?

A. Yes, I do.

Q. And it says that: Joe shook has visited Ron Froates or Froates --

A. I believe it's Froates.

Q. Okay. --A connector guru at Ford. They've decided that a 57Ps-type connector, with changes to tab locations and color, will suffice. Did I read that correctly?

A. Correct.

Q. Now, that -- that 57PS-type connector, that's a reference to the connector that was part of the switch, the brake pressure switch that T.I. installed -- supplied to Ford several years earlier; is it not?

A. I believe that's what they're referring to, yes.

Q. So basically -- And Joe Schuck, he works (sic.) for T.I., didn't he?

A. Yes, he did.

Q. So basically, what's happening here is that -- that Schuck talked has talked to Ford and Ford -- according this, it said yeah, we can use the same connector that we've been using?

A. That's correct.

Q. And is that what ultimately happened?

A. I believe there were some changes ultimately.

Q. Okay. And was Ford involved -- Was -- Was Texas Instruments involved in those changes?

A. I believe Texas Instrument was involved in making those changes.

Q. Okay. Now, let's go to Exhibit 50 --

*MR. MAYER:* 2.

Q. -- 52.

(Exhibit No. 52 marked.)

Q. I've marked now Exhibit --

*MR. MAYER:* Mr. Feeney, we have just five minutes left on the video, so we need to switch it out.

*MR. FEENEY:* Yeah. Sure. Go ahead.

*THE VIDEOGRAPHER:* Going off the record. The time is 1:54:59. It's the end of Tape 1.

(Recess taken.)

*THE VIDEOGRAPHER:* We're back on the record. The time is 1:59:06. It's the beginning of Tape 2.

*Q.* Okay. Directing your attention to Exhibit 52; is that correct --

*A.* That's correct.

*Q.* The -- or more Highlights?

*A.* These are more Highlights. These are from May 5th, 1989.

*Q.* Okay. And on those --

*MR. MAYER:* What was the date, Mr. Feeney?

*MR. FEENEY:* I think I -- I knew --

*THE WITNESS:* 05-05-89.

*MR. FEENEY:* -- the best laid plans, I knew I would screw this up.

*MR. MAYER:* That doesn't match the date on the --

*MR. FEENEY:* I know. It's one --

*MR. MAYER:* -- the one I have.

*MR. FEENEY:* That's the next one down. Here we go. I'm going the make this 52. Do you have 4-21-89, Eric?

*MR. MAYER:* No. I have 4-14.

*MR. FEENEY:* Yeah. That's what I

have. 4-21, 4-89, and 5-5, 4-14 -- 4-14 -- Where's my extra copy of 4-14?

*MR. MAYER:* Maybe you gave it to one of us.

*MR. JOLLY:* Here you go. I've already read it.

*MR. MAYER:* Here you go.

*MR. FEENEY:* I'm sorry. I don't know how I screwed that up. Let me do this again. I intended to mark as Exhibit 52 the 4-14-89 Highlight.

Q. Do you have that?

A. 4-14-89.

Q. And what is -- Is there a reference in that document to Kapton, under gasket -- under gasket.

A. Yes, there is.

*MR. MAYER:* Let me -- I -- I do need to make -- do make an objection, because the handwriting that you've got on there from your own notes, I think, is improper if the question you're going to ask is, is there a reference to Kapton; and you've got a note: First reference to Kapton.

*MR. FEENEY:* Yeah. That's just to myself. I'm not going to ask him to confirm that.

MR. MAYER: I know. But I think it's improper to show him a document with your notes and then ask him that very same question, because I think -- as you know, I think --

MR. FEENEY: That's what I just said, I wasn't going to ask him that.

MR. MAYER: Well, you did. You said: Where is the first reference to Kapton?

MR. FEENEY: Oh, did I? I'm sorry.

MR. MAYER: Yeah.

MR. FEENEY: Well, I withdraw that question.

MR. MAYER: Okay. So I'm not --

MR. FEENEY: In fact -- In fact, not only will I withdraw the question, but I'm just going to put a yellow sticky right over that reference -- Okay -- so that it's masked. The witness doesn't even know what that note says. Okay?

MR. MAYER: Let me -- Let me just say, would it make sense to go and get the clean copy now so you can use that?

MR. FEENEY: No. Because I -- I think it's going to be too time consuming and we'll -- you know, you guys will be upset because

we'll spend probably too much time trying to get them and -- and I want to get you out of here and --

*MR. MAYER:* Are -- Are all the documents going to have handwritten notes on them or only some?

*MR. FEENEY:* No. Only some.

*MR. MAYER:* Okay.

Q. Now, let's see. Okay. Let's get back to this. There is a reference to Kapton?

A. There is a reference.

Q. Item No. 2 under Gasket, it says: Elimination of the gasket using the Teflon coated Kapton as a seal. And is it the facts that early on in the development there was some consideration given to simply eliminating the gasket altogether and going with a Kapton seal?

A. That appears to be what -- what was being discussed.

Q. And that's in April of 1989?

A. That's correct.

Q. Now, do you know if Kapton was part of the 57PS brake pressure switch that was supplied by T.I. earlier?

A. I believe it was.

Q. And do you know whether the Kapton that

was supplied with the -- with the brake pressure switch that was installed in the '92 Town Car was Teflon coated?

A. I believe that the Kapton supplied for the '92 Town Car was Teflon coated.

Q. On do you know what the reason for the Teflon coating is?

A. It was to be -- As I understand it, it was to be a protection for the Kapton layer against material such as water.

Q. Okay. And did you ever see any data that indicated what the efficacy or the -- the effectiveness was of -- of -- of the Kap -- of the Teflon coating on the Kapton as opposed to Kapton that was not Teflon coated?

A. I don't recall seeing any data, although I believe that DuPont reported during -- or maybe it was through Texas Instrument that Kapton alone without Teflon was susceptible to water.

Q. Okay. So it's your understanding that there actually was a difference. If the Teflon coating on the Kapton was compromised in some way, degraded, so that it was no longer there or no long as effective, could that promote leakage?

A. I -- I would -- believe I would consider

that to be the case, yes.

Q. Okay. Now I'd like to go to the -- the 5-5-89 Highlight which I had previously put in front of you. I'm going to make that Exhibit 53.

(Exhibit No. 53 marked.)

*MR. FEENEY:* And here's one for you and there's one for this side of the table.

Q. Now, what do we have in front of you as Exhibit 53, Mr. Porter?

A. This is Highlights dates 5-5-89.

Q. And if you -- I'd like to direct you to the entry CCPS samples.

A. Yes.

Q. And it says: We had two lots of 10 undergoing the impulse test. However, this test turned up significant leakers at about 80K cycles. Inspection revealed torn Kapton seals. New devices were built using 2 and 3 pieces of Kapton. As a result, there are now four lots of 5 back underway on the Impulse test. To date, they have passed 100K cycles without problem. Passing this test will give me enough confidence to begin building sample quantities for the customers -- for the customer. Devices will not ship, however, until the Thermal Cycle test is completed too. Ship date still looks

like 05/26 if all goes well. Do you follow along with that? Did I read that correctly?

A. You read that correctly.

Q. All right. Now, in terms of where the development was at this point in time, is this an indication that T.I. is in the process now of -- of they've got some parts that they are now -- sample parts -- Maybe not even sample parts -- prototype parts that they're now beginning to test?

A. It appears that they have some pieces that they -- that they're building and -- and trying to understand what the different aspects of the design might be.

Q. And this is all very common, typical type stuff that you see in the early developmental stages, right?

A. Yes, it is.

Q. No unusual, for example, at this point in time that leakers might show up in -- in -- at 80,000 cycles?

A. That would be correct.

Q. And it looks like they're even maybe experimenting with what kind of Kapton to use here?

A. That's possible, yes.

Q. Or the number of Kapton layers?

A. It looks that way also.

Q. So at this stage in the development process, would you say that it's common for there to be failures or leakers or so forth in -- in the testing?

A. At this point in the development process, it's not a surprise that there are some failures.

Q. I mean, this happens really to everybody in the automobile industry and that in and of itself is not unusual, right?

A. That's correct.

Q. Okay.

A. I'd like to add something -- something to that though.

Q. Sure.

A. And that is that if this is based off of a previous design, it might be a little bit concerning as a design engineer that -- that it doesn't make 20 percent of the -- the expected life.

Q. Well, that's true. But remember, this is a very rigorous test that's being followed here.

A. That's correct.

Q. All right. So we'll have to wait and see what -- how this -- how this shapes up. Now, if you go on a little further in the -- in the Highlights

you'll see that -- that there's more reference to the short circuit test. And I'm going to direct your attention to --

*MR. FEENEY:* What -- Where are we --

*MR. MAYER:* 54.

*MR. FEENEY:* 54?

*MR. MAYER:* 54 is the next exhibit.

(Exhibit No. 54 marked.)

Q. 5-12-89 --

*MR. MAYER:* Thank you.

Q. -- Exhibit 54 is the Highlights for the week ending 5-12-89, correct?

A. That's correct.

Q. And as an overview, if you look, you'll see Mr. Offiler reports: CCPS samples continue to chug away on the Impulse Test?

A. That's correct.

Q. It says: Completed about two-thirds of the 500K test with no failure. And this is again about what you'd expect, would it not?

A. There is good news.

Q. And, of course, by 12-89, when did they go into production for the '92 Town Car, sir?

A. Production of the vehicle started towards the end of 1991.

Q. So we're two years away, two plus years away from production?

A. Approximately that, yes.

Q. Two plus years away from the time when T.I. has to be supplying production ready parts to Ford?

A. That's correct.

Q. And would you agree with me that things are looking pretty good at this point?

A. Yes, it is.

Q. And, in fact, T.I. says: We're gearing up to build a quantity for Ford by the end of May. Now, "quantity" means a quantity of samples and they're -- Is that right?

A. I would believe that's what they mean.

Q. And part of the deal there is just -- just to demonstrate that you can take these prototype parts that you've been building sort of one at time and build them in bulk and still maintain the high quality that you'd expect, right?

A. That's correct.

Q. And that everything looks good so far, right?

A. That's right.

Q. Now, there's another reference to customer

new and here we again see a reference to Gary Klingler to discuss his requested short circuit test and act/rel tolerances. What is that a reference to, act/rel tolerances, actual --

A. I believe that would be referring in this part to the actuation and release tolerances of the part.

Q. Okay. It says: Gary wants the short circuit test to help allay fears from others at Ford who are concerned with brake system failure modes. 5-6 weeks is okay with him. Between us we agreed upon a procedure: Run devices at 125 Centigrade ambient while pressure-cycling, and increase current to failure. Now, did I read that correctly?

A. Yes, you did.

Q. Why -- Why is that test being done, sir?

A. In the previous Highlight it was noted that Mr. Klingler was concerned that if there was a short that occurred somewhere between the brake pressure switch and the cruise control clutch coil, that -- that that short might create a current path, an additional current path through the switch.

Q. Okay. And as an electrical engineer, you think that's a good idea?

A. Yes.

Q. And any reason at this point to think that the switch was susceptible to short circuit and damage as a result of that?

A. There was no reason to think that there was, but also no reason to know for sure that there wouldn't be either.

Q. Okay. Now, just to kind of complete this thought I'd like the to go to 8-5 -- 8-25-89 and ask you, sir --

*MR. FEENEY:* What exhibit is that number?

*MR. MAYER:* Should be 55.

(Exhibit No. 55 marked.)

Q. All right. Exhibit 55 is the -- are the Highlights for the week ending 8-25-89.

*MR. FEENEY:* And here's a copy for you, Mr. Mayer; and we've got one here.

Q. Take a look at this Highlight for the week ending 8-25-89. Do you see that, sir.

A. Yes.

Q. And again, directing your attention to the to the -- to the testing, do you see that?

A. Yes.

Q. Says: We completed an over-current test to failure as requested by Gary Klingler. The

purpose was to allay any fears that may arise at Ford about hydraulic system integrity in event of a short circuit. So --

*MR. MAYER:* I think I have a different exhibit than you.

*MR. FEENEY:* 8-25-89?

*MR. MAYER:* You handed me 5-25-89.

*MS. WEINER:* 5-29.

*MR. FEENEY:* I'm sorry. I meant to hand you 8-25. May I --

*MR. MANSKE:* You might want to hold on to it because he'll probably get to it.

*MR. FEENEY:* Right. I -- I didn't give you 8-25?

*MR. MAYER:* No.

*MR. FEENEY:* I didn't?

*MR. MAYER:* Why don't we go off the record.

*MR. MANSKE:* Here it is.

*MR. FEENEY:* Here it is. Okay. And here's the -- Here's another one. I'm sorry.

*MR. MAYER:* So is 8-25-89 the --

*MR. FEENEY:* That's Exhibit 55.

*MR. MAYER:* Exhibit 55.

*MR. FEENEY:* Yeah.

MR. MAYER: Okay.

MR. FEENEY: I'm sorry. I'm trying to zip through this.

Q. What -- What is that about, this over-current test of failure?

A. I believe they're referring to the tests that -- that Gary Klingler was requesting in the event that there was some short circuit between the brake pressure switch and the speeds control clutch coil.

Q. And this says: This is not a Ford spec and no official procedure exists; Gary and I developed a test procedure over the phone. Does this indicate to you that there's a lot of exchange of information and so forth going on between the two companies?

A. I would think that there was exchange, yes.

Q. In -- In the spirit of that context and environment, do you think that -- can you -- can you think of a corporate reason why Ford would withhold from T.I. the knowledge that the switch was wired hot at all times?

A. No, I can't.

Q. Would that be consistent or inconsistent

with what you're seeing?

A. I think that would be inconsistent.

Q. And, in fact, what this revealed was that there was no damage to the hydraulic section of the switch, right?

A. That's correct.

Q. So in the event of a short circuit there wasn't any damage being done to the other side of the fluid containment cavity, so to speak, or the hydraulic side?

A. That's correct. It says: Absolutely no damage was done to the hydraulic section of the switch.

Q. I'm just wondering, I mean, if there was some possibility that maybe on some of these fires there had been some kind of a short circuit that could've possibly affected in some way the hydraulic side that influenced the membrane, does this test kind of rule all that out?

A. This -- This test certainly doesn't direct one in -- in that direction.

Q. Would it be inconsistent with that sort of a theory?

A. Yes, it would.

Q. Okay. Now, I'd like to direct your

attention next to -- And I promise that I'm going to actually distribute the right one here -- a Highlight dated 12-8-89, which I'll mark as Exhibit 56.

(Exhibit No. 56 marked.)

Q. And that particular --

*MR. FEENEY:* There's 56.

*MR. MAYER:* Uh-huh.

*MR. FEENEY:* Here's 56. Here's all of 56 and I think we are set to -- to go.

*MR. MAYER:* The -- The two documents that you presented me, the first and second page are not sequential. Are these two separate exhibits?

*MR. FEENEY:* They are -- They're -- They are -- I was going to use the together, but I -- I don't mind parking them. I mean, I don't want to suggest that they're all the same Highlight. But there's a reference to the spec there and then I'm going to go right into that. So why don't we mark it as 56 and then the next set 57 --

*MR. MAYER:* Okay.

*MR. FEENEY:* -- just to be on the safe side so we know that they're not mixed together and -- you know.

(Exhibit No. 57 marked.)

Q. Okay. So 12-8-89, this Highlight is written by Mr. Offiler and I want to direct your attention to the third paragraph under Program Issues. Do you see that, sir?

A. Yes, I do.

Q. It says: Work is also ongoing at Ford to finalize the written specification. We have given Ford our rough draft based on a marked up 57PS T-bird suspension control specification, which will form the basis for discussion and negotiation of the final spec. Did I read that correctly?

A. That's correct.

Q. Now, in the course of your investigation into the facts and circumstances of the issues that you were involved in, did you familiarize yourself, to some extent any way, with the specification that dealt with or pertained to this part?

A. With the specification for the Town Car brake pressure switch, yes.

Q. Okay. Now, did you later learn after some of these documents were produced that -- that -- that the history of the switch actually may have gone back to this 57PS T-bird switch?

A. Yes, we did.

Q. And did you -- did you have an opportunity

to review during the course of -- during the course of the -- your work in this case some of the draft materials that were referenced in this Highlight and in the T.I. documents?

A. I believe that this Exhibit 57 would refer to one of those drafts.

Q. All right. Let's take a look at Exhibit 57 if we could. Would you tell us what we're looking at in Exhibit 57, sir?

A. This is an engineering specification for a part named Switch ASSY, a Brake Pressure Shock Absorber Control, Part Number ES-E75 -- or E7SC-2283-AA.

Q. And are you satisfied, sir, that this is a specification that -- that is, in fact, the 57PS T-bird suspension control specification?

A. Yes.

Q. That is referenced in Exhibit 56?

A. That's correct.

Q. And just so that the record's clear, this was a specification that applied to an earlier part -- Not the brake pressure switch -- but any earlier part supplied by T.I. to Ford?

A. That's correct.

Q. And if we look through this, do we find

writings and marks -- marked -- marked up sections of this?

A. Yes.

*MR. FEENEY:* And I will note for the record, since I made the comments earlier, "these -- these -- this is not my handwriting or anyone on our behalf. This was the way the document was produced to us.

Q. And do these marked up handwritten changes and so fourth have any significance to you?

A. They appear to be changes that somebody was making to the document.

Q. All right. And is this consistent with the information that you received during the course of your investigation, that the specification that controls this particular brake pressure switch was something that was reviewed, commented upon and, in fact, negotiated between T.I. and Ford?

A. There may have been that information.

Q. And, in fact, is it true that in Mr. Offiler's Highlights, when he talks about supplying this -- you know, this marked up stuff, he says that the marked up 57PS T-bird suspension control specification which will form the basis for discussion and negotiation of the final spec? Did I

read that correctly?

A. That's correct.

Q. In your experience, is it common for suppliers such as T.I. to negotiate the terms of a specification that they are required to meet?

A. It is commonplace for a supplier to, yes, look at -- at details of a specification.

Q. And in this particular case, is it -- is the record -- does the record indicate that Ford compelled T.I. to adopt a specification that they created with no negotiation or input or discussion from T.I.?

A. It doesn't appear to be the case.

Q. And, in fact, as we go through this, do we see other exchanges between the two companies that indicates that there was ongoing negotiation on this specification?

A. Yes, it appears to be ongoing negotiations.

Q. And, for example, with regard to the Proof Test that appears on Page 5, you'll see that the -- actually, the specification, the Acceptance Requirements, Section 2a, do you see that?

A. Yes.

Q. Now, this again is the earlier

specification on the '87 part, right?

A. That's correct.

Q. It says: Nonconformance is defined as any evidence of fluids leakage, seepage, or drop in test pressure. Do you -- Did I read that correctly?

A. That's correct.

Q. And, in fact, that basic bogie, if you will, was carried over into the specification that was ultimately adopted for the brake pressure switch; no leakage --

A. That's correct.

Q. -- or leakage equals nonconformity, right?

A. That's correct.

Q. And here we have handwritten marks all over this Proof Test. Did you ever find any information that indicated to you that T.I. sought some sort of a variance from that requirement that they had apparently been living with regard to this earlier switch since 1987?

A. No, we did not.

Q. And, in fact, if you go further on this document, you actually see on Page 9 of 13, I mean, there's a whole test that's just deleted --

A. That's correct.

Q. -- is that right? And again, would this

be an example of the type of give and take that would be occurring between supplier and -- and manufacturer?

A. Yes.

Q. Okay. Let's -- Let's go on and take a look at, if you will -- I want to go to -- I just want to go to 2-2-90 -- We can come back to -- to that, but let's just -- So we've got this -- 58 is Exhibit 22 (sic.) -- These are the Highlights for the period ending 2-2-90. Do you see that, sir?

A. That's correct?

*MR. FEENEY:* And let me get this sent around.

*MR. MAYER:* Thank you.

Q. Here we have -- Let's see, 58 --

(Exhibit No. 58 marked.)

Q. In this particular -- We're now what, about a month-and-a-half or so after that Exhibit 57? What was the date of Exhibit 57 -- 55?

A. 55.

Q. 56. I'm sorry.

*MR. FEENEY:* What was the date of that.

*MR. MAYER:* 56 was dated 12-8-89.

Q. Okay. 12-8-89. So now we're about two

months after that. And under specifications this reads: "Significant activity at Ford this week. Our proposed specification was finally scrutinized by the key players at both Pass-Car and Light Truck." The reference to "our proposed specification," what is that a reference to, sir?

A. It appears that it's Texas Instrument owning a specification.

Q. The reference of "our" is to T.I.; is that right?

A. That's correct.

Q. "Negotiating through Joe Schuck, we were able to win concessions in at least three areas of major importance to us: The proof spec was lowered to 4K psi (from 5K); the humidity spec was revised to follow MIL-STD-202F; and Ford's proposal to raise the pressure during the temperature cycle test (from present 1450 psi to 2K) was shot down. Did I read that correctly?

A. That's correct.

Q. Now, let's talk about this for a minute. If we were talking about, as far as the durability testing is concerned, basically, we know -- all know that at this point the basic parameters of the test. It's 500,000 cycles, it's at 1450 psi and you run it

at 135 degrees Centigrade?

A. Yes.

Q. All right. And if you wanted to vary -- Let's say you wanted to make it a more severe test, you could see basically increase the cycles?

A. Correct.

Q. You could increase the temperature?

A. Correct.

Q. You could increase the pressure?

A. Correct.

Q. Now, is there any indication in any of the documents that we've seen so far that indicates that either T.I. or Ford felt it was necessary to increase the number of cycles that the switch was subjected to?

A. No, we haven't seen that.

Q. And, in fact, we later see references to the fact that 500,000 cycles is a very stringent test?

A. Yes, we do.

Q. Is there any indication in any of the documents that we've seen so far that indicates that anyone wanted to increase or felt it was necessary to increase the temperature at which the test was run?

A. No, there was not.

Q. And finally, sir, is there some indication that at some point in time Ford wanted the pressure to be increased at the -- at -- in running this test?

A. This would be an indication of that.

Q. And what was T.I.'s reaction to that?

A. They were opposed to that.

Q. Were they successful?

A. Apparently so.

Q. This says that -- that Ford's recommendation or idea was shot down; is that right?

A. That's correct.

Q. Now, is there any indication that that was of resuscitated?

A. I don't know of anyplace.

Q. Okay. Would this indicate to you that T.I., as a quality Q-1 supplier, believed that the test that they were being asked to be -- to supply this part to was a rigorous, stringent state of the art extremely severe test?

A. Yes, I would.

Q. In fact, what did that Failure Mode and Effects Analysis refer to this test, as extremely stringent back in 1991?

A. Yes.

Q. And that would be a reflection of this sort of thinking, right?

A. That's correct.

Q. We don't need to increase the pressure because it's already an extremely stringent test --

A. That's correct.

Q. -- is that right? Okay. Let's go on to -- Pick up my microphone -- And if you look just a little bit later in time at 3-23-90, Exhibit 59 --

(Exhibit No. 59 marked.)

Q. Now we get about five or six weeks later and we find that progress is being made on the test specification, do we not?

A. That's correct.

Q. And according to the 3-23-90 Highlights under Customer Issues, Mr. Offiler writes: "Joe Schuck indicates that Pass-Car has finally accepted our proposed Engineering Test Specification. The Humidity Spec they've agreed to is a modified MIL-STD 202F. We will continue with our Humidity comparison test." Did I read that correctly?

A. That's correct.

Q. So it appears now that T.I.'s Engineering Test Specification has been approved by Ford?

A. That's correct.

Q. Now, it's -- in the next paragraph there appears to be some continuing issue with Light Truck; is that right?

A. That's what it appears to be.

Q. It says: "Light Truck steadfastly insists upon a sample size of 50 for the low temperature drift test. And it goes on to talk about -- about that. Do you see that?

A. Yes.

Q. And so as of March 23, 1990, it would appear that the -- that the -- that the test spec, and most importantly, the Impulse Test and the Proof Test criteria have been agreed upon by the parties?

A. That appears to be the case.

Q. And that is, still at this point in time, March 23, 1990, that is what, 18 months before production requirement?

A. Approximately, yes.

Q. Basically, that gives T.I. 18 months to put together its assembly lines appliance, its productions lines and make parts that meet requirements?

A. That's correct.

Q. Was there ever any suggestion in any of

the materials that you reviewed along the way that indicated that Ford somehow impeded or delayed T.I. in their ability, in the time that they have to work on their assembly lines and their manufacturing processes and everything else, to get a first class part ready to go by September of 1991?

A. Not that I'm aware of.

(Exhibit No. 60 marked.)

Q. Now, I want to show you Exhibit -- Because we're talking about the Impulse Test and made reference to this from time to time. Let me show you what's been marked as Exhibit 60. Just take a look at that for just a second, would you? Exhibit 60, sir, what is Exhibit 60?

A. It appears to be a Texas Instruments documents from the Materials and Controls Group.

Q. And the date of this particular document is 9-20-91; is that correct?

A. That's correct.

Q. And this appears to be some sort of internal Texas Instruments document; is that right?

A. That's correct.

*MR. MAYER:* Let me object.

*MR. PEENEY:* Okay.

*MR. MAYER:* It's an incomplete

document. He doesn't know what it is and you haven't you haven't submitted the entire document.

*MR. FEENEY:* It is an incomplete document. I certainly agree with that. And I -- I -- if I had the whole thing, I'd put it --

*MR. MAYER:* I'm not making foundation objections, based on our agreement that all my objections are.

*MR. FEENEY:* You got it.

*MR. MAYER:* Okay. Fine.

Q. But in any event, we've got this document and it's Page -- it's Page 15 of some other document. We know it's a T.I. document, don't we, because Texas Instruments with the State of Texas is right there on the bottom?

A. That's correct.

Q. I mean, we don't see the -- the blue oval on this documents, do we?

A. No, we don't.

Q. There is a description pertaining to the Impulse Test under 3.10.4 regarding -- regarding the -- the Impulse Test and perhaps some results. I don't know what the deal is. But would you just read that paragraph into the record, please, sir, under that section?