EA02-025

TEXAS INSTRUMENTS, INC.'S

9/10/03

REQUEST NO. 7

BOX 10

PART A – I

PART C

3 OF 3

A. I think what Steve's doing here is he, he's testing both passenger car and light truck parts.

Q. All right.

A. He's seeing passenger car parts start to leak where light truck parts are not. So he's looking at all of the differences between those two parts, comparing them, to see if any of those differences can give him a clue in terms of what might be happening on the passenger car parts.

Q. Okay. Then the next thing he lists is, "extraordinarily tight sensor crip -- crimp, as evidenced by the deformations where the Kapton layers overlap." Can you decipher that for us and, and what it means?

MR. CARTER: Object to form.

A. By extraordinarily tight sensor crimp, Steve's offering a hypothesis that maybe the parts were crimped to too high a pressure.

Q. And, and then made deformations where the Kapton layers overlap?

MR. CARTER: Object to form.

Q. Right? Based on what Steve wrote?

A. In Highlights, he saying that there were deformations where the Kapton layers overlap.

Q. Yeah.

A. That's what he wrote in the Highlights.

Q. Okay. And he says that the -- he says, "very flat washers (unlike the norm, which is slightly cup-shaped) which may also contribute to the tight crimp." Is he talking about there the washer that's indicated on the drawing as washer?

A. Yes.

Q. Pretty much of a flat surface --

A. Yes.

Q. -- thing? It sounds like that washer isn't entirely flat, based on what Steve is saying?

A. There is a tolerance on the flatness of the washer.

Q. He's saying that they're usually slightly cup-shaped. Is that -- is he saying that that cup shape in the washer is -- will

accommodate some of the thickness of the Kapton when the part is crimped together?
A. No. I think he's just saying it's typically slightly cup-shape.
Q. Okay. For no reason?
A. I would imagine that's the case, because of the way the part is stamped.
Q. All right. Would that allow or accommodate for more clearance for the Kapton to fit in that space?
MR. CARTER: Object to form.
A. I don't know. It depends which way the, the cup is -- depends which way the cup might be --
Q. Cupped?
A. Cupped, yeah. And --
Q. If it's cupped away from the space where the Kapton is, then it will provide more space for the Kapton, right?
A. In that one area, potentially.
Q. Yeah. All right. Well, let's just skip ahead a little bit further. Okay. Let's go up to August the 23rd, '91. We're looking at some more validation here

having to do with light truck 77PS devices. And then it says, the next paragraph, "The AMI-built passenger car devices on the same tests were aborted at 389K cycles, with 8 of 12 failed due to ruptured Kapton." Now this is during the development step -- stage, right?

A. This is during final production validation testing.

Q. Okay.

A. But before production.

Q. Okay. So switch has been developed and, as far as TI was concerned, the dimensions for the internal components of the switch had been established?

A. Yes.

Q. And now TI is attempting to run some tests -- maybe Ford tests, or are they are exclusively Ford tests, or, or some test -- TI test?

A. At a minimum it would include all Ford, Ford's tests.

Q. Okay.

A. There may be some other TI tests as well.

Q. All right. And, and there's some problems with the validation test because there's some switches that have ruptured Kapton, right?

MR. CARTER: Object to form.

A. There were some switches on the passenger car test that did not meet the cycle life --

Q. Okay.

A. -- specification.

Q. Well, Steve says that the test was aborted because eight of the -- eight of twelve failed due to ruptured Kapton. That means they failed the test, right? Eight of twelve?

A. Eight of twelve parts were leaking before the five hundred thousand cycles, not meeting the specification.

Q. Okay. And he talks about what he believes may have caused these failures, right?

A. He talks about one potential hypothesis.

Q. All right. What is that?

A. That the passenger car converters travel

further than the standard design.

Q. Okay. Would -- did that end up being a problem with the Kapton failures on this test, this validation test that's on TI Bates stamp 4322?

A. No, it was not.

Q. What, what ended up being the problem with these switches that would not pass the cycling required by Ford?

A. The problem was isolated to the crimper on the AMI machine.

Q. Okay. And the, the switches that Steve tested came off the AMI achine -- AMI machine, right?

A. Yes.

Q. They were produced by the fully automated process?

A. Yes.

Q. Okay.

(Discussion off the record.)

Q. Okay. Okay. Let's jump to the next week, August the 29th, '91. It's talking more about validation, and it sounds like Steve is writing here about efforts which

are attempting to find out the cause of early Kapton failures in passenger car devices, right?

A. I think Steve is working to try and understand why the -- those parts built for the passenger car devices did not meet the cycle life specification.

Q. Do you know when it was that he came to a resolution or learned enough information to find out what was wrong with the AMI line to produce these failures?

A. Essentially, we knew that the -- that 57PS parts were meeting the specification, the cycle life specification. So we looked at the differences between the 57PS and the 77PS parts, and one of the key differences was the crimper. So we went and built parts completely on the AMI except for crimped on the 57PS line, the hand line --

Q. Yeah.

A. -- to see how those parts performed. And those parts met specification.

Q. Okay. So that happened when?

A. That happened in the September time frame.
Q. All right. Let's go to September, and let's try to find that. On September the 6th, '91, looks like there's a bunch of testing done at five hundred thousand cycles with a bunch of different configurations, right?
A. Yes.
Q. And which one of those configurations was used to make the 57PS crimp?
A. Anything that states hand line crimp would be the 57PS crimp.
Q. Okay. For example, the first one on the list, it says production cup, hand line crimp with AMI pre-crimp?
(Discussion off the record.)
A. Yes.
Q. What is AMI pre-crimp?
A. On the AMI machine, after the device is assembled with three points on the cup are bent in to hold the device together --
Q. Uh hum.

A. -- as it's transported to the crimper.
Q. To the hand crimper?
A. Even on to the automated crimper. On the production -- on, on -- even if it completely went through the automated line, the pre-crimp brings the parts together, holds them together as it -- and then it will go down the conveyor belt to the dowel table that has the crimper on it.
Q. All right. And that table is an automated table? It does the crimping automated at that point?
A. Yes, it's a dowel table that indexes from station to station. It indexes to the crimper where the, where the crimpers mate.
Q. Okay. And so that was the end of the problem? You just made -- Texas Instruments just made the switches using, using the 57PS crimping procedure?
MR. CARTER: Object to form.
A. What do you mean the end of the problem?
Q. The end of the problem having to do with

Kapton life and crimping?

A. TI presented the results to Ford that parts built on the AMI but crimped on the hand line would meet specification. Ford approved production with that production process and gave TI ninety days to resolve any issues with the AMI crimp machine.

Q. Okay. So during that ninety day period, TI produced switches using that suggested method, with the hand crimp, right?

A. Using the production process that include crimping on the hand line that had demonstrated that it passed the Ford ES spec requirements.

Q. Between what date and what date did TI produce switches using that method?

A. I don't know the exact dates. It would have been the October or November launch of production. And per Ford the -- we stopped using that method in the February time frame.

Q. You stopped using the --

A. The hand line crimped.

Q. Okay.
A. It went to the fully automated crimp.
Q. All right. And during all -- during that period from around November or October, when you first started -- when TI first started selling passenger car pressure switches, from then on it was selling switches to, to Ford, and they were being placed on passenger cars for sale, right?
A. Yes.
Q. Okay. Well, then let's go a little bit further ahead in time. Before we do that, I want to stop on September 20th, '91. TI Bates stamp 4316. Under the, under the second paragraph under *VALIDATION*, talks about -- it says, "Unfortunately problems occurred in both the Car and Truck devices during the testing. The ES states 'all devices must pass.' Car is worse due to the significant difficulties encountered with Kapton life." And then it talks about some conditional or approval. Then at the bottom, the last paragraph that --

the last sentence of that paragraph, it says we've had, "The difficulty we had was salt spray failures where 4 out of 6 devices filled with salt solution, which caused extremely high current leakage." That, that salt solution that we talked about a while ago, the salt spray failures, that was the same kind of test we talked earlier, right, salt spray?

A. Yes, that's --

Q. And that was a Ford --

A. -- salt spray, same type of test.

Q. That was a Ford imposed test, correct?

A. Ford specification requirement.

Q. Okay. And then it says, the last sentence says, "However, careful scrutiny of these devices showed the leak path was via the mating connector, and we have blamed the design of this connector on -- in the writeup." So TI blamed the design of the connector for the leakage of the salt water into the actual side of the switch during the salt spray test?

A. Analysis of the part --

MR. BURROW: Object to form.

A. Analysis of the parts after the salt spray test showed that the salt water had gotten into the parts through the mating connector.

Q. Yes.

A. So when TI wrote the report, they stated that fact, that the salt had entered the part through the mating connector, which is not a controlled -- a TI controlled part. It's a Ford defined part.

Q. Right. The mating connector is a Ford controlled part, right?

A. Yes.

Q. And TI has nothing to do with making a good seal on that mating connector, or not -- or even putting a seal on there, right?

A. The mating connector is supplied to Ford by another supplier. TI does not supply the mating connector to Ford.

Q. All right. And it's not --

MR. MANSKE: Objection, non responsive.

Q. It's not, it's not TI's responsibility to supply a gasket on the mating connector, right?
A. That's correct.
Q. Okay. Did TI report this failure, the salt spray failures which occurred on September the 20th, 1991, to Ford?
A. Yes, TI did.
Q. And was that done through this paper that this sentence mentions? It says, "We have blamed the design of this connector in the writeup." Did, did Ford communicate that in this writeup that's mentioned here?
A. TI writes a validation test report for the production validation testing.
Q. Uh hum.
A. And those results would have been included in that validation test report.
Q. Okay. So TI would have mentioned this salt spray failure in the writeup that's mentioned here?
A. Yes.
Q. Okay. And that would have been given to

Ford?

A. Yes.

Q. And that would have been in a time period before the switches, any switches, were sold from TI to Ford to be put on passenger car vehicles, right?

A. Yes.

Q. Okay. Did any action ever occur after this date to resolve this connector leak problem?

A. The connector that was -- that is used on the truck platform was changed at a later date.

Q. What about the passenger car platform?

A. The passenger car platform had a slightly different mating connector than the truck platform.

Q. Is this talking about truck or car platform?

A. This is talking about the truck platform. The failures occurred in the truck test.

Q. Where does it say that?

(Discussion off the record.)

A. One, two, three, four, five, six, seven

-- seven lines down in the second paragraph, Steve Offiler states --

Q. The sentence right before, "the difficulty?"

A. Yes.

Q. Okay. So the problems encountered with truck are less severe, and it just talks about -- okay, I see. At the same time, you guys are dealing with this Kapton failure problem and trying to figure out what's going on with the crimper, right?

A. Yes.

Q. What, what would happen if salt water were allowed to leak into the internal components of the electrical side of the switch? Over time?

A. It would corrode the, the terminals in the spring arm inside the switch. Could result in the switch being non functional.

Q. All right. Turn to the week ending 9/27/91? *VALIDATION*, passenger car. First paragraph, about the second sentence down, it says, "Apparently Mr.

Pease," I guess that's Bruce over there at Ford, right?

A. Yes.

Q. "Did not prepare Mr. Maeroff because a deviation from procedure, using hand line built parts without fluid resistance testing to pass Impulse, has caused quite a commotion." When, when Texas Instruments wanted to go to this hand line procedure to do the crimping, was there going to be a test omitted?

A. We had a commitment on the date to Ford to finish the testing. Because of that time commitment, we were unable to do the fluid resistance test on twelve parts before the impulse test that were -- for the parts that were built on -- were crimped on the hand line.

Q. Okay.

A. So the parts were not tested -- or the twelve parts that went on impulse test had not gone through the fluid resistance test.

Q. All right. And that fluid resistance

testing was a Ford engineering specification test?

A. Yes, it's a Ford requirement. And we reported to Ford that we had run it that way.

Q. And did, did the switches eventually get produced and built and sold without being run through a fluid resistance test?

MR. CARTER: Objection to form.

A. Some parts had been run through the fluid resistance test. Twelve out of the twenty four parts that go through the impulse test are supposed to go through the fluid resistance test before the impulse test. That piece of it was not run initially. Ford approved the, the qualification of the devices to be run on the hand line, even though that piece of the ES testing had not been done on those parts. Ultimately, parts were run through the full testing.

Q. You mean ultimately when?

A. I know that for the final PV testing off

the AMI, that was done in December.
Q. What, what, what's PV testing?
A. I'm sorry. Production validation testing.
Q. Okay.
A. That was done in December of '91. The parts went through the full ES test. I'm not sure if any other parts between those two points had gone through the fluid resistance and then the impulse test.
Q. Okay. So -- but between October or November time frame and this date in December, there was some switches that were built and sold and given to Ford and put on vehicles which did not go through the entire litany of tests that Ford required TI to perform on the, on the pressure switches?
MR. CARTER: Objection, form.
A. The parts that were delivered in production went through all the test requirements Ford had defined for switches that are built in production.

The production validation testing that was completed in September that qualified the use of the hand line for the crimping process, twelve out of the twenty four parts on impulse test did not go through fluid resistance tests before the impulse test. Ford approved that spec deviation.

Q. Okay. But the same deviation, did it apply to all those switches that were produced from that date in October to December?

A. Not every switch produced would go through that testing.

Q. Understand. But do -- TI would take out certain amount of switches and every once in a while, I'm going to do some testing, right? There in production?

A. Yes.

Q. And did those tests -- did those switches that were pulled out during production, during that time period between October and December, did those switches go through the fluid resistance test?

A. During that time period of production,

any switches -- all the switches pulled from production followed Ford specification requirements. I don't remember if Ford specification requires production parts to be pulled out for fluid resistance testing or not. If I looked at the Ford specification, I could answer that question better for you.

Q. When did the switches start being fluid resistance tested?

MR. CARTER: Objection to form.

A. I mean, parts had been fluid resistance testing throughout the development of the switch.

Q. Well, around this period in December or January or November, when, when was it that the production switches started, started to be fluid resistance tested?

MR. CARTER: Objection to form.

A. By September of '91, the parts had gone through fluid resistance testing and successfully passed that test. Even the

parts that went through the original passenger car validation testing had passed fluid resistance testing.

Q. But it says right here, and you just said a while ago, that, that the switches that are being produced or built on the hand line are going to be done without fluid resistance, resistance testing?

MR. CARTER: Objection, form.

A. Can you refer to me where you're reading?

Q. Right here where it says, "apparently." That sentence starting that?

A. The production validation testing defines that twelve parts that go through impulse testing should go through fluid resistance testing first.

Q. Okay. Okay. After the, the part has been validated, is there any --

A. No, this is -- I'm referring to during the validation --

Q. I understand that. Let's say that passed and everything, but then you're in production. Would switches be -- what --

which switches have to go through the fluid resistance test after the switch has been validated?

A. I don't remember if the Ford specification requires it.

Q. Okay.

A. If, if it does, the testing would have been done. If I could look at the Ford specification, I could tell you.

Q. Right. Okay. So when, when was it that the fluid resistance testing resumed in order to, to validate the passenger car switches?

MR. CARTER: Objection to form.

A. Passanger car switches had already successfully passed fluid resistance testing.

Q. Okay. When did the fluid resistance testing take place?

A. On the --

Q. For this -- after 9/27/91, because he's asking for this to not happen in September. And I just want to know when

it started to happen again, when did the fluid resistance test -- testing resume?

MR. CARTER: Objection, form.

A. TI asked for a deviation to allow the production validation testing to include impulse testing on twenty four parts that had not been through any fluid resistance testing rather than twelve parts that had been through fluid resistance testing and twelve parts that had not.

Q. Uh hum.

A. I'm not sure if there was any other fluid resistance testing done immediately after that time period. By December of, of 1991, I know fluid resistance testing was run. I don't know if it was run any earlier than that time frame.

Q. And that, that December fluid resistance test was run on the hand crip -- crimp devices or the AMI automated produced devices?

A. It was run on both.

Q. All right. And they all passed?

A. And they all passed.
Q. Okay. Let's go to the Highlights dated October 25th, '91, TI Bates stamp 4310. And the second paragraph of that -- it's hard to read -- but the second, the second sentence starts with, "Tear drops were observed in most devices?".
A. Yes.
Q. What -- that was mentioned a while back, and I just -- if you can somehow describe to us what this teardrop phenomenon is that appeared on the Kapton?
A. The teardrop phenomena is the visual shape of what the Kapton looked like of viewing the top of the Kapton. Essentially, the Kapton wets in here to the washer and the converter.
Q. Okay.
A. So it, it bends inward. And that goes three hundred and sixty degrees around. If this bending inward is not uniform three hundred and sixty degrees around, if there is one point where the Kapton doesn't fully come into this area, if you

look visually on the top of the Kapton, it looks kind of like a teardrop.

Q. Okay. Was the teardrop phenomenon blamed in any way for this problem with the Kapton failures?

MR. CARTER: Objection, form.

A. The teardrop phenomenon was evaluated to see if it had any influence on cycle life.

Q. And did it? Did the teardrop phenomenon have any, have any influence on the cycle life?

A. No. Teardrop phenomenon does not influence cycle life.

Q. And when was that determined by TI?

A. We've looked at -- we went and looked at parts in 1999 and saw parts with tear drops, without tear drops.

Q. In 1999?

A. In 1999. That had no difference in cycle life performance between parts with tear drops and without tear drops.

Q. So after a certain number of years, I

guess the switch was in service that you looked at?

A. During this time frame, TI was never able to prove whether the teardrop phenomenon had any impact on cycle life or not.

Q. And it wasn't resolved? The issue was not resolved about teardrop at that time?

A. Did not prove whether it had any impact in cycle life or not.

Q. Okay. What did Texas Instruments finally determine was wrong with the, the crimping machine on the AMI line that was causing the problems?

MR. CARTER: Objection, form.

A. The crimp heads on the AMI machine were realigned. The tubing and the hoses were cleaned out. Essentially, the crimper was, was, was re set up, refurbished, and the crimp dies were moved from the hand line to the, the AMI automated line. And parts were manufactured using those crimp dies.

Q. Uh hum. So I guess you just fixed up

the, the crimper? Texas Instruments just, basically just fixed up that crimper?

A. Well, we fixed the crimper --

MR. CARTER: Objection, form.

A. -- we realigned the heads.

Q. Yeah.

A. And used the crimp dies from the hand line.

Q. All right.

(Discussion off the record.)

Q. And was there something specific about this die that was causing the problems?

A. I don't know.

Q. Didn't have some rounded off edges or sharp edges, or something like that, that were causing problems?

MR. CARTER: Objection, form.

A. It's possible that -- I do know not -- I do not know what the differences were between the two dies.

Q. And did TI look at the -- the, the

crimper is operated pneumatically?
A. Yes.
Q. Did -- and what --
A. Actually, I'm not -- it could be hydraulically. I'm not sure if it's pneumatically or hydraulically.
Q. All right. But at any rate, there's some kind of a controller that goes to the supply that actuates the crimper, right?
A. Yes.
Q. And did TI look at that also?
A. TI looked at all aspects of the crimper.
Q. What is production drift?
A. Are you referring to somewhere in the Highlights?
Q. No.
A. Okay. I'm not sure exactly what you mean. Maybe that's referring to actuation or release pressure drift.
Q. Of production parts? Production pressure switches? If it says produc -- if, if there's a term production drift, then that would then indicate that it has to do with production switches rather than

develop -- developmental switches or switches that are pre-production?

A. I, I'm not sure.

Q. Okay. Turn to the week ending December the 20th, '91? Now, at this point in time, in December in 1991, Texas Instruments has already resolved, or has already found out the problem with the crimper, right?

A. Well, before December 20th, 1991, TI's been able to make parts pass using the hand line --

Q. Uh hum.

A. -- crimper versus the automated crimper. So that we had isolated the problem to the automated crimper. By this point, we were just completing the validation testing, production validation testing --

Q. Uh hum.

A. -- on devices crimped off the AMI crimper.

Q. Okay. So TI knew that the problem for this Kapton life deal, or issue, was related to the AMI crimper, right?

MR. CARTER: Objection, form.

Q. The automated crimper?

MR. CARTER: Objection, form.

A. TI understood that the, the original issues found in the first passenger car validation testing were related to the automated crimper.

Q. Okay. Now, on this week, this is TI Bates Stamp 4299, the first paragraph is entitled *DIAPHRAGM LIFE*, life, and it looks like there is a test that's being run here with control lot, square Kapton and all round Kapton. What is that?

MR. CARTER: Objection, form.

A. Control lot, square Kapton --

Q. Yeah.

A. -- would be the type of Kapton sheets currently used in production. And round Kapton would be just a different shape of the Kapton diaphragm.

Q. All right.

A. Would be round instead of square.
Q. Do you know why this kind of test was done, or who did this test that's identified on TI Bates stamp number 4299?
A. When the initial problems occurred with the impulse test, there were many avenues that were being pursued. And this was probably one of the avenues being pursued.
Q. Okay. If you look at the -- what does beta mean? It says beta equals 5.3 and beta equals 9.2?
A. In Weibull analysis, beta refers to the slope of the, the line, and theta refers to the point on the line where sixty three percent of the devices have failed during the testing.
Q. What is a better result with regard to beta, a high number or a low number?
A. A high number.
Q. So on this test, it looks like the round Kapton lots had a higher beta, beta number, right, than, than the control square Kapton?

A. During this test, yes.
Q. Yeah. And then theta, the numbers? Which, which of the numbers have the better result?
MR. CARTER: Objection, form.
A. A higher theta means whatever part you're testing would have longer life.
Q. So the theta of the round Kaptons exceeds the control lot square Kapton by one thousand or so? About that, right?
A. In terms of theta. The difference between the two thetas was about one million, one thousand K.
Q. Okay. One -- okay. Is that significant, those numbers? The differences in those numbers of theta and beta of the two different types of Kapton tested?
MR. CARTER: Objection, form.
A. Significant is a statistical term. I'd have to do a statistical test to confirm that that is significant. But the bottom line is, in terms of a specification of

five hundred thousand cycles, both sets of parts a hundred percent met that specification.

Q. All right. Did Texas Instruments communicate this Kapton test it did with square and round Kapton?

MR. CARTER: Objection, form.

A. What, what do you mean, communicated the test?

Q. Oh, communicate the results of it or the procedures for the test or anything at all having to do with this test?

MR. CARTER: Objection, form.

Q. To Ford?

A. I don't know whether these results were presented to Ford or not.

Q. Okay. Okay. Let's go to the next week ending January 10th, 1992 --

MR. CARTER: When you get a chance, Mike, I need to, I need to break.

MR. JOLLY: Okay.

MR. CARTER: All right?

THE WITNESS: I could use a break too.

MR. JOLLY: Yeah, that's fine.

MR. CARTER: Thanks.

THE VIDEOGRAPHER: This is the video reporter. The time is 2:04. We are going off the record.

(Recess.)

THE VIDEOGRAPHER: This is the video reporter. The time is 2:16. We are back on the record.

Q. Okay. Turn with me to the week ending January the 10th, '92?

A. Yes.

Q. Is that where we were a while ago, I think? Let's turn to the week, the week after that, following that. 1/17/92, Bates stamped 4297. There is a paragraph entitled DIAPHRAGM LIFE, and it's in bold print. It talks about the on-going square versus round Kapton test, and it says it has produced interesting results. And it says something about the test

compares round and square cut Kapton. I guess from the same sample sheet, right? Why, why was this round versus square Kapton test being conducted? Can you tell us?

A. This specific test was being tested to compare square verse round Kapton from the same Kapton sheet, because the initial testing that had shown different performance between round and square Kapton were from two different sheets, and therefore two different lots of material. And we wanted to see if the difference was due to the different lots of material or whether it was due to the different shape of the Kapton.

Q. Okay. And did it matter about where the material came from, or did it matter about the shape of the material?

A. According to Steve here, he says that this sheet of material seems to have greater resistance to rupture.

Q. And which sheet of material is that? Is that called the sample sheet?

A. That's called the sample sheet.
Q. And he compared that to production, right?
A. In this test, he was comparing square diaphragms and round diaphragms from the same sample sheet material.
Q. Okay. And did the round do better, or did the square do better when they came from the same sample sheet?
A. According to Steve here, he doesn't have those results yet.
Q. Okay. But he goes on to state in that same paragraph -- well, I guess it's just something he states, 'cause it was an observation on his part. He says, "It seems obvious that the sample material has much greater resistance to rupture, and it remains to be seen whether round versus square makes a significant difference in these parts. Upon completion of this test, we should involve Dupont to explain the material differences, production versus sample sheet, and possibly upgrade the

production material." What does he mean by that? Does he mean that the sample sheet material performs better than the production material?

MR. CARTER: Objection to form.

A. What I think Steve is saying is that based on the earlier test, he saw the sample sheet seemed to be performing better, or material cut from the sample sheet seemed to be performing better than the production material. And, and felt that once we had all the data, it would be worthwhile sharing our results with Dupont to see if they had any suggestions.

Q. Do you know if TI ever did share the re -- the results of these tests with Dupont to give Dupont a opportunity to explain the material differences?

A. I don't know.

Q. Have you ever seen any information from Dupont which may explain the differences between the production versus the sample

sheet --

MS. WEINER: Objection to form.

Q. -- that was used in this test?

(Discussion off the record.)

A. I have not seen any material from Dupont that discussed the results of, of this test. And, and relating to the two different sheets of material used. I'm not sure even the -- if upon completion of all the tests what the final conclusions were.

Q. Okay. In the next paragraph, it talks about a synopsis of develop -- developments in diaphragm life testing were presented the week -- I guess it was the week of this report?

A. Yes.

Q. Now, I, I guess, based on what that says, is there's -- several engineers got together and discussed the Kapton life issues?

A. Yes. I would imagine that's what occurred.

Q. And then some ideas were generated, and it appears that some of those ideas may be listed here. And these ideas are ideas that come from -- I, I'm assuming here, but you just let me know if this is true or not -- these ideas come directly from Texas Instruments engineers who were involved in the developmental work with these pressure switches?

A. I don't know who the engineers that got together. I would expect them to be Texas Instruments engineers.

Q. Okay.

A. I don't know if they all worked in the pressure switch area or not.

Q. All right. But they were all -- probably all Texas Instruments engineers, right?

A. I would expect that they would be, yes.

Q. Okay. The, the third sentence of that paragraph, after it says, "several good ideas were generated," says, "The general attitude is that a more robust design is required which is not sensitive to production line variables such as crimp

tool geometries, crimp forces, etc." What does that mean when, when Stephen makes that statement, a, a more robust design is required?

MR. CARTER: Objection, form.

A. I think what's Steve's saying is if -- that if we were able to widen the tolerances, for example, on crimp pressures and different crimp parameters, that would make the device more manufacturable, easier to manufacture.

Q. Okay. That's fair enough. And this symposium and, and, you know, it took place the week of January the 17th, 1992, and this was after the time period where TI started to make pressure switches for the passenger cars, the Panther platform cars, on the automated line, right?

MR. CARTER: Objection, form.

A. According to what Ford has told us, TI did not switch to production on the fully automated line until February of 1992.

Q. Okay. So TI's still making switches using the hand crimp method?
A. At this point, in --
Q. At this point in time?
A. -- in January 17th.
Q. Yeah. And TI's also discussing amongst itself, amongst its engineers, possible problems and solutions to Kapton life?
MR. CARTER: Objection, form.
A. The engineers are discussing hypothetically different ways to modify the design to improve diaphragm life.
Q. Yeah, like the first sentence says in that paragraph, "Developments in diaphragm life testing," what Steve wrote? Do you agree with that? Developments in diaphragm life testing?
A. I'm sure Steve --
MR. CARTER: Objection to form.
A. -- Steve presented to the group the results of the testing that had been done.

Q. Okay. And then if you look inside that paragraph, it says, "We will proceed," and I, I assume he means Texas Instruments, "will proceed" -- is that right, when he says we?

A. Yes.

MR. CARTER: Object to form.

Q. "Will, will proceed with testing and developmental work, including the following experimentation: reduce/limit Kapton clamping by machining a step on the outer portion of the hexport flange to provide metal to metal contact to washer and using a smaller -- a small diameter round diaphragm." Explain to us what that suggestion is on this diagram, which is marked as Exhibit Number 2?

A. Would be machining a step into the, the hexport, similar to the step where the elastomer sits.

Q. Okay . Draw a --

A. Right here.

Q. -- and exemplary line -- just a line which would exemplify where that step

would be placed on the -- where was that step going to be?

A. In the hexport --

Q. Outer portion of the hexport flange?

A. It would be in here, for example. I have not drawn it to scale. It would be a much thinner step than that.

Q. Okay. Draw a line out from where you drew that, over here in a clear area, where we can -- you can label that hexport flange step. Okay. So this suggestion would do what? How, how can this solve any problems having to do with Kapton failure, or, or life?

MR. CARTER: Objection, form.

A. We, we were looking at ideas to see if there was any way to improve the cycle life of a product.

Q. Okay.

A. And this idea would take the Kapton out of the crimp stack up.

Q. All right. So it would provide a location for the Kapton to go into, rather than

being crimped or crushed by the, the hexport flange, right?

MR. CARTER: Objection, form.

A. It would hold a place for the Kapton to sit where the Kapton would not be part of the crimp stack up.

Q. And another part of this fix would be to, as he said in, in his suggestion here, use a smaller diameter -- a small diameter round diaphragm, right?

A. We would have to --

MR. CARTER: Objection, form.

A. -- use a smaller diameter Kapton part in that configuration so that it would not be clamped between the metal of the hexport and the metal of the washer.

Q. Right. And also it says round diaphragm rather than square, correct? Steve?

A. Yes, he says round in the Highlights, yes.

Q. Okay. And then there's a semicolon, and then there's a new suggestion, another

suggestion. "Try full rounded diaphragms with only two layers." Why would he suggest that, that arrangement?

A. My assumption would be because full round diaphragms do not meet the DRIF specification requirement. So he was going to try two layers to see if you would get better wetting of that -- of the Kapton to the converter and, and the washer with only two layers.

Q. So three layers would not meet DRIF specifications?

A. With round Kapton.

Q. With round Kapton, but two layers might?

A. It's possible.

Q. Okay. And it's just a suggestion, right?

A. These are just ideas that the team came up with to go evaluate and see how they perform.

Q. All right. And then the next suggestion is try Kapton without Teflon. Would that work, as far as you know?

A. No, I would not expect that to work.

Q. Why not?

A. 'Cause the Teflon coating is needed to protect the Kapton from any water in the brake fluid.
Q. What's wrong with water in the brake fluid and Kapton?
MR. CARTER: Objection to form.
A. Water can degrade the strength of Kapton in the right conditions.
Q. And Teflon's needed there to protect the Kapton, right?
A. The Teflon prevents the water from being in contact with the Kapton.
Q. And which would slow down any degradation that the water would cause on the Kapton, right?
A. Well, it would be a barrier that would prevent contact, so there wouldn't be degradation of --
Q. Wouldn't be any degradation?
A. -- of the water to the Kapton.
Q. As long as you have Teflon there, that has a barrier between water and Kapton, and you're not going to have any

degradation of the Kapton?
A. Due to the -- you would not have any degradation due to the water.
Q. Due to the water contact?
A. That's correct.
Q. Okay. Now, the next suggestion is, "Addition of a bump, male feature on the hexport with corresponding female in the washer in order to stretch the Kapton during assembly." What is he talking about there?
MR. CARTER: Objection, form.
Q. Can you indicate that on the diagram, which is on Exhibit Number 2?
MS. SPEER: Nike, rather than every party objecting, may we have an agreement prospective that --
MR. JOLLY: Yeah.
MS. SPEER: -- that every objection applies --
MR. JOLLY: To everybody, yeah, that's fine.
MS. SPEER: Thank you.

A. I'm not sure exactly what Steve Offiler means by this approach, saying a bump on the hexport and, and it must mean kind of a hole on the, on the washer side, I assume where the hexport meets the washer, which would be in this configuration. But I'm not sure what he means by, by that.

Q. A male and female part that mate up? Sounds pretty complicated, doesn't it?

MR. CARTER: Object to the --

A. I'm not sure exactly what he means.

MR. CARTER: Object to the side bar.

Q. That was a question, not a side bar.

MR. CARTER: Well, then I'll object to the form.

Q. Then the next one is, "The use of pre-bent concave hexports to see if this eliminates the tendency of the diaphragm to move radially inward, which is thought to happen as the hexport and washer bend to crimp." What is a concave hexport?

Where is the concave area he's talking about on the hexport?

A. This is what he's talking about out here in the hexport.

Q. Sort of concave in in this direction like this? Inwardly? Or what, what do you think he means?

A. Probably inwardly, so as to -- washer has -- when we talked before about the washer bending, to compensate for that -- difference.

Q. Yeah. All right. Do you know if any of his suggestions were ever tested or utilized by Texas Instruments in any of, any of the pressure switches it makes?

A. Texas Instruments makes pressure switches today with Kapton without Teflon.

Q. For use in brake systems?

A. No, not for use in brake systems, for use in transmission systems and some power steering. Ah --.

Q. How about, how about press -- and go ahead, I'm sorry. I interrupted you.

A. I don't believe any of the other ones are

in production today.
Q. Any of the other what?
A. Any of the other items on this list included in Steve Offiler's Highlights.
Q. What things -- what items on this list were put into production at all, ever, if you know?
A. We do have pressure switches that use Kapton without Teflon in production. We do have pressure switches that use round diaphragms in production.
Q. And those pressure switches that use round diaphragms, are they for brake fluid?
A. No, they are not.
Q. What are they for?
A. Transmission switches and pump mount power steering switches.
Q. But none of them -- do tho -- do those types of switch, do they have two or one Kapton diaphragms?
A. Transmission switches have one layer.
Q. Uh huh.
A. I'm not sure if the power steering pump

mount pressure switches have one layer or two layers.

Q. And were those switches designed with those round Kapton diaphragms after this synopsis?

A. The transmission switches were designed with, with the round Kapton before this synopsis. The pump mount power steering pressure switches with Kapton were designed after.

Q. Did Texas Instruments ever point out or communicate these tests to Ford? The tests that are -- and the, and the suggestions that are identified on the TI document, Bates stamp number 4297?

A. I don't know if these specific tests were communicated to Ford or not.

Q. These weren't the kind of things that Ford required TI to do to validate any of its switches, right?

A. Ford requires TI to continuously improve the product. These would be examples of things TI would do to continuously improve the product. If TI found

something that they felt improved the product, then they would bring that information to Ford, and Ford would decide whether or not they wanted to im -- implement that change in the product.

Q. But you can't tell us if these developments, this synopsis of development of -- in diaphragm life testing, if, if this information was ever communicated to Ford around this time period when it was created, back in January the 17th, 1992?

A. The first statement of synopsis of developments in diaphragm life testing, I would guess, refers to all the work that had been done to qualify the 77PSL2-1 for Ford, and all of that information would have been shared with Ford.

Q. Okay. So what you're telling us is that all of these suggestions were communicated to Ford? The suggestions that are listed here by Stephen Offiler back in January of '92?

MR. CARTER: Objection --

A. No.

MR. CARTER: Objection to form.

A. That's not what I'm saying. I think --

Q. They were communicated to Ford before that time?

A. No, I think you're misunderstanding what Steve wrote here. I think what he's saying happened was he brought a group of engineers together, presented to them the results of, of the production validation testing of the 77PSL2-1 test, chose some of the issues that were found with diaphragm life in the original validation testing, and the team brainstormed some options of things to look at for continuous improvement forward looking.

Q. Right.

A. The, the, the production validation testing that had been done on the 77PSL2-1 would all have been communicated to Ford.

Q. That had already been done, those validation testings -- testing had

already been done?
A. Yes.
Q. Correct?
A. Yes.
Q. Okay.
A. The specifics of some of these ideas, I don't know whether those were communicated to Ford or not.
Q. All right. If they were communicated to Ford, how would that have been done? By a document or a report or something?
MR. CARTER: Object to the form.
A. Talking hypothetically here, because I don't know whether these were communicated or not.
Q. Okay.
A. Communication between TI and Ford was by letter, was by phone, was by document. There were various forms of communication.
Q. Uh hum. Okay. Let's go -- okay. Let's just go to January 24th, '92, just real quickly. On the *DIAPHRAGM* LEFT -- *LIFE*

test regarding the round versus square diaphragms, it looks like the test is still on-going, right?

A. Yes.

Q. And it says that the round test parts are again showing the best life, correct?

A. That's what the Highlights say, yes.

Q. And the square test parts, which were taken from the same sample sheet of material as the round, have five of six dead. Isn't that what it says?

A. Yes, that's what the Highlights say.

Q. So it appears that, I mean, the test is not complete yet, but it appears at this point in time, in January 24, 1992, that a round diaphragm has a substantially longer life than a square diaphragm?

MR. CARTER: Objection, form.

Q. Is that, is that correct or not?

A. I don't think you can conclude that from the data presented --

Q. What, what else --

A. -- in this paragraph.

Q. -- what else would you need to, to conclude that?

A. You would need to understand at how many cycles the, the three failed of the round test parts verse the five of the square test parts.

Q. Okay. Let's go on, then, to, to the next week of January 31st, '92, *DIAPHRAGM LIFE* at the bottom. Says, "The most recent test of square vs. round Kapton has been completed. The round Kapton from the sample sheet fared best, with" -- what's R-E-L mean?

A. Reliability.

Q. Ninety nine point seven percent. Next is square, ninety nine point five three. And production square Kapton is ninety five point seven six. Is the production square Kapton the Kapton that TI uses to put in the switches that are distributed to the people who buy the Panther platform vehicles?

A. The production square Kapton is the Kapton that is put in the production

switches that are sold to Ford.

Q. Okay. And that was put in to production switches that were sold to Ford up to that time period, in January 31st, 1992, correct?

A. The switches that were sold -- production switches that were sold would have the production square Kapton up to that time period, January 31st, '92 and beyond that time period.

Q. Okay. Let's take a break, 'cause she's going to change the tape.

THE VIDEOGRAPHER: This is the video reporter. The time is 2:38. We're at the end of tape number two. We are going off the record to change tapes.

(Recess.)

THE VIDEOGRAPHER: This is the video reporter. The time is 2:40. We are back on the record. This is the beginning of tape number three, the continued deposition of [redacted]

[redacted]

Q. Let's turn to the week ending February

the 28th, 1992. Under the paragraph entitled *PRODUCTION ISSUES*, and this paragraph talks about suspected high temperature pin shift. What is that?

A. This would be shift of the actuation or released pressure over temperature.

Q. Okay. And does this have to do with the Panther platform pressure switches? Can you tell?

A. It does not say.

Q. It doesn't, does it?

A. No.

Q. So we really don't know what this has to do with?

A. No.

Q. It says, though, that the devices are representative of regular production. And so whatever they are, they're in production, whatever these switches are, right?

A. Whatever these switches are, yes. They would be -- they're representative of regular production.

Q. And in February of -- the end of February

of '92, were the Panther platform pressure switches in production?

A. Can you repeat the question?

Q. In February 28th of 1992, were the Panther platform pressure switches in production?

A. The speed control deactivation from TI --

Q. Yes.

A. -- for the Panther platform was in production in February of --

Q. Okay.

A. -- February of '92.

Q. And utilizing the fully, fully automated line at that point?

A. Based on information Ford has provided to us. And TI was in production using the fully automated line sometime in February of '92.

Q. You can't tell based on the records you have when TI went to the fully automated line for producing the Panther platform switches?

A. Our records show when we qualified, when we finished production validation testing

off the fully automated line, when we sent in the request to Ford to approve us on running on the fully automated line.

Q. And when was that?

A. We finished the validation testing in the end of December of 1991. We sent in the request, I think it was a day later, the end of December of 1991.

Q. Okay. It, it was a couple of months before TI started actually making switches with the automated line?

A. TI could not change that process until we received Ford approval.

Q. Okay. So --

A. So Ford would have had to approve, and then there would have been some inventory residual --

Q. Residual form the hand crimp --

A. Right.

Q. -- method?

A. Before we would have converted over.

Q. Okay. But it was about a two month period or so, give or take a little bit?

A. Yes.

Q. But it was before March of '92?
A. I believe so, yes.
Q. Do you remember if this high temperature pin shift issue, identified on TI Bates stamp document 4291, do you remember if that had anything to do with the Panther platform switches?
A. I do not know if it had anything to do with the Panther platform switches or not.
Q. And then there's some talk in here about silent switches and --
A. Where, where are you referring to?
Q. Well, let me see here. Bates stamp number 4289. That would be the week ending -- I don't know. I don't have a first page of that one. Bates stamp number 4289. The last paragraph there, regarding the silent switches. "Ford notified field sales today that __ noise/brake feel has been identified as a problem" at St. Thomas? That's the plant where they make Crown Vics and Grand Marquise, right?

A. That's what Steve Offiler says here.
Q. So I guess this, this issue, the silent switch issue, has to do with the pressure switches for the Panther platform, right?
A. Yes.
Q. It says, "an alert is being issued," and -- did you ever see that alert issued by Ford about the silence switches? Or noisy switches? I don't know how they, they were called.
A. No, I did not see any alert by Ford.
Q. Do you know anything about this silence switch, or noisy switch, issued in the --
A. Yes.
Q. Okay. Tell us about it.
MR. CARTER: Objection to form.
A. Tell, tell you about the silent switch verse noise switch?
Q. Yeah. Tell us, just briefly, if you can, what it was caused by and how, how TI fixed the problem, if there was a problem?
A. The switch, the 77PSL2-1, as it's

designed, as many of the TI pressure switches are designed, when the disc snaps, there's an audible snap. You can hear the disc snap. As we got into production with Ford and people started hearing that snap, I think here was occurring -- the assembly plant when they would final test the vehicle, they'd step on the brake and they were able to hear the disc snap audibly. People were concerned that maybe there was a problem. So Ford requested to TI to change the design of the switch so you could not hear the snap of the disc. The noise in the disc does not indicate that the part was not meeting specification. There was no specification on noise from Ford during the initial development.

Q. Okay. Did it indicate to TI that there was any out of spec components inside the switch that may be causing the noisy switch?

A. No, there was nothing wrong with the switch that had a noise when snapped.

It's designed to have a hard snap, so you would expect to have the noise.

Q. Right. But I think that somewhere in here it talks about silent switches, or, or quieter switches, or something?

A. Right. And those switches are designed to be quiet.

Q. What, what had to be done differently between the two switches?

A. The disc is changed so that it creeps. Remember when we talked about --

Q. Yeah.

A. -- creep release?

Q. Uh huh.

A. It's changed so the discs creep through. So when they finally go to their final state, they're moving slowly, because they're slowly creeping through the change rather than a very fast change.

Q. Okay. I just wanted some explanation on this one. On Bates stamp number 4280, the week ending May 22, '92? *PRODUCTION DRIFT ISSUE*. Explain for me what, what this means about this lab-crimp versus --

or -- and production-crimp sensors?
A. It just states that parts that are crimped in the design lab versus parts that are crimped in production have a different pressure deflection curve.
Q. Okay. Then on that same week ending May 22, 1992 under Bates stamp number -- TI Bates stamp number 4278, we have a entry for high temperature impulse testing for light truck. It says, "We have completed a first-pass Impulse test running devices at 170C (ambient and fluid) with dismal results. All 12 devices failed between 222K and 262K cycles, with a Weibull beta of 26.4(!) and a theta of 2246K." What does all that mean, this first-pass impulse test?
A. Ford came to us and said they have an application where they'd like to use a pressure switch which is going to see one hundred and seventy degree C temperature.
Q. What is that in Fahrenheit, about?
A. I'm not sure exactly.
Q. Okay. Is that the highest temperature

pressure switch that TI has ever had to try to develop?

A. Yes. And to date, we don't -- we do not have any pressure switches in production that will work at those temperatures.

Q. Was this -- do you know if this was going to be a, a brake pressure application -- a brake fluid application, or some other fluid?

A. I think it was for a brake application.

Q. All right. So the tests that TI performed, the first-pass impulse test, you know what type of switch was used to conduct this test by Texas Instruments?

A. It doesn't say here, but I would assume it was the standard light truck 77P8 part that was in production.

Q. Okay.

A. And Ford had probably asked us can that part survive the hundred and seventy C application.

Q. All right. Then it says all twelve devices failed between 222K and 262K. What, what was it -- what did Ford want

the cycles to be for passing? Do you know?

A. It doesn't, it doesn't say here, but I'm assuming they wanted it to still pass the five hundred thousand cycle specification.

Q. Okay. And what is Weibull or Wiebull beta of 26.4 indicate to you?

A. That's a, a, a reasonably high beta, which indicates that all the devices fail -- all devi -- all of the devices failed very close to each other in terms of cycle life.

Q. Okay. So -- I, I see. And then theta of 246, that's the average cycle life, or what?

A. That is the cycle life, or the number of cycles at sixty three percent of the parts would have failed at.

Q. Oh, right. Okay. And then upon opening the devices, Texas Instruments discovered the Kapton was disintegrating, or leaving a thin Teflon skin basically in tact. Do you know if this Kapton that was used in

this test in these switches was square or round?

A. I don't know. Doesn't say.

Q. If it were one -- just one of the light truck pressure switches, it would probably be the square version?

A. It would square version, then, yes.

Q. It would probably be the production quality, or whatever, Kapton from Dupont?

A. The standard production Kapton from Dupont.

Q. Yeah, the standard production. Then it says, "This is shedding light on the old diaphragm life issue. A chemical attack now a primary suspect." What does -- what do you think that means, based on what you know about this?

MR. CARTER: Object to form.

A. Are you referring to the sentence you just read?

Q. Yeah.

A. I'm not sure what Steve meant by this statement. I would expect the difference in performance results would be due to

the temperature exposure.

Q. And he said, "with chemical attack now a primary suspect." Why do you think he would suspect chemical attack as being a primary suspect in the Kapton failure?

MR. CARTER: Object to form.

A. Can you repeat the question?

Q. Why would you think Steve -- why do you think Steve would believe that chemical attack would be a primary suspect in these Kapton failures?

A. I assume --

MR. CARTER: Object to form.

A. I assume 'cause Steve saw that Kapton was disintegrating, using his words. But one of the ways that it could be disintegrating was based on chemical attack.

Q. Uh hum.

A. So he's setting up hypotheses to try and understand the results of the test.

Q. Okay. Did, as far as you know, did Texas Instruments ever conduct any Kapton life tests using old brake fluid? Between the

dates in '90, say 1990 anytime, up to about 1993 or so?

A. The brake fluid we'll use in our testing is brake fluid we have sitting in our, in our test area.

Q. Is it new?

A. So that brake fluid will vary in age.

Q. So is it --

A. When we get the first drum, it's new, and it will get older over time.

Q. Okay. So you buy a new drum and it sits there, and you just draw out of it as you need it?

A. Yes.

Q. Is it type one, two, three, five, seven, or do you remember?

A. About three weight fluid.

Q. About three?

A. Yes.

Q. And that's the usual brake fluid utilized by most car manufacturers?

A. Yes. And I believe it's specified in the Ford spec to use type three brake fluid.

Q. Okay. Has TI ever conducted any Kapton

life tests utilizing brake fluid, old brake fluid, which may be recycled from old automobiles, or from automobiles?

A. I think we -- I do not think we've done any pressure cycling testing with, with old brake fluid from recycled automobiles, but I'm not positive.

Q. Pressure cycling, you said?

A. Yeah, pressure cycling.

Q. Any kind of tests?

A. During --

Q. Utilizing brake fluid that's recycled from vehicles, old brake fluid that's recycled from vehicles?

A. During the investigation with Ford in 1999, we got brake fluid from some old vehicles, and put those brake -- that brake fluid into the switch to understand the conductivity of that brake fluid and what current might flow through the switch in that condition.

Q. Did it, did it -- can it carry a current?

A. It carried roughly the same current that new brake fluid carried.

Q. No difference?
A. Small differences. Both were on the order of milliamps.
Q. So new brake fluid is conductive to electricity?
A. It's conductive to an extent. And it has a certain resistance. It doesn't have a zero ohm resistance, but it doesn't have an infinite resistance either.
Q. Okay. So TI, either on its own or requested by any customer, had never performed any Kapton life testing utilizing brake fluid recycled from cars? And I'm talking about a time period from about 1990 to 1995?
MR. CARTER: Object to the form.
A. I'm not aware of any testing that TI had run using old brake fluid on pressure cycling testing.
Q. Okay. The temperature that Ford suggested on this test that's identified on TI document Bates stamped 4278, the temperature of one hundred and seventy C,

do you know why Ford requested such a high temperature for testing a, a switch? A pressure switch?

A. I do not know why Ford requested that temperature.

Q. And did Ford ever convey to Texas Instruments about this, about this test we're talking about, where the switch was going to be located within the vehicle?

A. Not that I'm aware of.

Q. After -- you know, I don't have any more Highlights after June 19th, 1992. That's all I got. Did you ever review any other Highlights after this period, in more recent, that may suggest or, or continue on with this testing that had to do with the high temperature impulse testing for light truck that Ford requested for TI to do?

A. I have read Highlights more recent than the, the June of 1992. I don't remember that much discussing around high temperature impulse testing.

Q. All right. Well, did you ever hear or

read about what eventually became of this test, or why it was run and what it was used for and whether or not a switch ever got developed that met these kind of condition?

A. I know that TI never developed a switch that met those kind of conditions. No switches from Ford are specified for those temperatures. I'm assuming Ford dropped the request.

Q. Okay.

MR. JOLLY: Pass the witness.

MR. THOMAS: No questions.

MR. MANSKE: Ford has no questions.

MS. WEINER: Mr. Beringhause, I'm going to have some brief questions for you.

(Discussion off the record.)

THE VIDEOGRAPHER: This is the video reporter. The time is 2:58. We are going off the record.

(Recess.)

(Exhibit Number 4, Notice, was marked and entered into evidence.)

THE VIDEOGRAPHER: This is the video reporter. The time is 3:01. We are back on the record.

CROSS EXAMINATION.

BY MS. WEINER:

Q. [redacted] my name is Monique Weiner. I represent Dupont in this litigation. I'm going to have a very few brief questions for you. You discussed in response to some questions that Mr. Jolly asked you that water could be detrimental to Kapton. Was Texas Instruments aware at the time it was manufacturing the pressure switches for the Ford Panther platform vehicles that water was detrimental to Kapton?

A. I'm not exactly when Texas Instruments was first aware that water could be detrimental to Kapton.

Q. Were -- do you know if Texas Instruments knew that water was detrimental to Kapton before the pressure, pressure switches

went into production for Ford?

MR. CARTER: Object to the form.

A. Which pressure switches are you referring to?

Q. The pressure switches that were eventually installed into the Panth -- Panther platform vehicles?

A. Yes. I believe Texas Instruments was aware that water could be detrimental to Kapton before production of the 77PSL2-1 switch for the Panther Platforms.

Q. Okay. At any time during the development and production of the pressure switches that went into the Panther platform vehicles, was the Kapton supplied by Dupont to Texas Instruments ever found by Texas Instruments not to meet Texas Instruments' specifications?

A. Can you repeat the question?

Q. Sure. At any time during the development or production of the pressure switches that were installed in the Panther platform vehicles, was the Kapton that

Dupont provided to Texas Instruments ever found by Texas Instruments not to meet its specifications?

A. I think there were some issues in terms of how the Kapton may have been packaged.

Q. Okay.

A. Things like that. But essentially in the performance of the Kapton, there's nothing that I'm aware of.

Q. Okay. So in the actual performance of the product itself, aside from packaging issues, there were no concerns that Texas Instruments had about the specifications of Kapton?

A. None that I'm aware of.

Q. Okay. How did Texas Instruments come to use Kapton in its pressure switches, in general, not just in the Panther platform vehicles?

A. I don't know how TI was first connected with Dupont for using Kapton. I'm not aware of the, the specific details.

Q. Okay. You weren't involved personally in the relationship between Dupont and Texas

Instruments insofar as the selection of Kapton for use in Texas Instruments' pressure switches?

A. In terms of the initial selection of Kapton, that's correct.

Q. Okay. Do you know if Dupont knew that the Kapton it was providing to Texas Instruments was going to be used in automotive pressure switches?

A. Yes. I know that Dupont was aware that the Kapton to TI would be used in automotive pressure switches.

Q. And Dupont was aware of that prior to production of the pressure switches for the Panther platform vehicles?

A. I would expect so. I'm not sure of the exact timing.

Q. Okay. You don't have personal knowledge of the exact time?

A. I do not have personal knowledge of the exact time.

Q. Okay. The Highlights that Mr. Jolly went through extensively with you and discussed talk about several testing

procedures that were employed during the development process before production actually occurred of the pressure switches for the Panther platform vehicles, was any of that testing during the development stage and prior to actual production ever discussed with Dupont?

A. I don't know whether any of that testing was discussed with Dupont or not.

Q. Okay. Based on the documentation that you've reviewed in advance of this deposition and, and the deposition that you gave in December, have you seen any documentation that would lead you to believe that Dupont knew of any of the testing during the developmental stage that was being conducted by Texas Instruments?

A. No.

Q. Do you know if Texas Instruments ever told Dupont about the teardrop phenomenon that was discussed in the Highlights documents that are attached as Exhibit 1?

A. I do not know.

Q. You talked with Mr. Jolly in connection with the Highlights document about the testing that was done of round versus square sections of the Kapton and the possibility that the round and square Kapton in the previous test may have come from different lots. Do you recall that testimony?
A. Yes.
Q. Okay. Do you know for certain if the material from different lots -- the Kapton from different lots supplied by Dupont was actually different in any material way insofar as the specifications that Texas Instruments called for?
A. I do not know whether -- that the material was different.
Q. Okay. And do you know whether any of the material may have not met the specifications that Texas Instruments called for?
A. I'm not aware of any material from Dupont that did not meet the specifications --

Q. Okay.
A. -- from Texas Instruments.
Q. Thank you for your time. Those are all the questions I have.
MR. BURROW: Mr. Jolly, for the record, my name is Stephen Burrow. I just have two questions for you real quick.
CROSS EXAMINATION.
BY MR. BURROW:
Q. Mr. Jolly had asked you at the beginning of the deposition whether or not Texas Instruments had sent anyone down to inspect vehicles belonging to the Campbells, Paynes and other plaintiffs who -- in whose cases your deposition has been noticed today. Do you recall that question and answer you gave?
A. I don't recall the specific question. I remember discussion about those topics.
Q. All right. Do you -- was, to your knowledge, Texas Instruments given an opportunity to inspect the Campbell's, Payne's and other vehicles that are at

issue in this deposition prior to those parties filing their lawsuits?

A. Not that I'm aware of.

Q. Thank you. No further questions.

MR. CARTER: And I would just like one more thing on the record, which is that I'm going to provide the court reporter with the deposition notices in the Payne, Rasca and Krupp cases, and that they'll be made a part of the record and exhibits per agreement of Counsel here today.

MR. JOLLY: I agree.

MR. CARTER: No further questions.

THE VIDEOGRAPHER: This is the video reporter. The time is 3:09. We are going off the record.

C-E-R-T-I-F-I-C-A-T-E

Commonwealth of Massachusetts
Suffolk, SS

I, Jeffrey Gabriel, a Notary Public in and for the Commonwealth of Massachusetts, do hereby certify:

That [redacted] the Witness whose deposition is hereinbefore set forth, was duly sworn by me, and that such testimony is a true and correct transcription of my stenotype notes taken in the foregoing matter, to the best of my knowledge, skill and ability.

I FURTHER CERTIFY that the foregoing transcript is a true and correct record of the testimony given by the said plaintiff at the time and place specified hereinbefore.

I FURTHER CERTIFY that I am neither a relative nor employee of nor counsel for any of the parties, nor am I financially interested directly or indirectly in the outcome of this action.

IN WITNESS WHEREOF, I have hereunto set my hand and Notarial Seal this ____th day of July, 2000.

_____
Jeffrey Gabriel, Notary Public

My Commission Expires: December 21, 2006

* * * PLEASE NOTE * * *
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DEPOSITION REPORTED BY: ____________________ ON: ________

ERRATA / SIGNATURE PAGE

I, the undersigned, ________________________________ do hereby certify, under the pains and penalties of perjury, that I have read the foregoing deposition and that, to the best of my knowledge, said deposition is true and accurate with the exception of the following corrections listed below:

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DEPONENT'S SIGNATURE ______________________________

Subscribed and sworn before me this __________ day of __________

NOTARY PUBLIC ______________________________