Howell, Rosa (NHTSA)

From: Hershman, Larry (NHTSA)
Sent: Tuesday, February 02, 2010 3:34 PM
To: Howell, Rosa (NHTSA)
Subject: FW: DP09-005 Docket

Rosa - Please enter.
Thanks.

From: Clarence Ditlow [mailto:cmdiii@autosafety.org]
Sent: Tuesday, February 02, 2010 12:12 PM
To: Hershman, Larry (NHTSA)
Cc: Demeter, Kathleen (NHTSA); Yon, Scott (NHTSA)
Subject: RE: DP09-005 Docket

My error, I saved the January 12 email on January 15 & got the date wrong. I will shortly send you a text version of the Estes deposition.

Clarence

From: Larry.Hershman@dot.gov [mailto:Larry.Hershman@dot.gov]
Sent: Tuesday, February 02, 2010 11:11 AM
To: Clarence Ditlow
Cc: Kathleen.Demeter@dot.gov; Scott.Yon@dot.gov
Subject: RE: DP09-005 Docket

Dear Mr. Ditlow,

Thank you for the additional information you sent us. I have one question for you: I've sent the January 20 and 31 emails and attachments from you, along with the Estes deposition CD I picked up from Michael Brooks on January 22, to be processed and entered into our public file, but the immediately previous submission I have from you was your email to Kathy DeMeter dated January 12. I have no submission dated January 15. If you did submit something on that date, could you please forward it to me? I will notify you when the Estes deposition is processed and entered.

Thank you,
Larry Hershman

Lawrence L. Hershman
Office of Defects Investigation, NVS-212
Office of Vehicle Safety - Enforcement
National Highway Traffic Safety Administration
U.S. Department of Transportation
Washington, DC 20590
Larry.Hershman@dot.gov
(202) 366-4929

From: Clarence Ditlow [mailto:cmdiii@autosafety.org]
Sent: Sunday, January 31, 2010 10:21 PM
To: Demeter, Kathleen (NHTSA); Yon, Scott (NHTSA); Hershman, Larry (NHTSA)

Cc: Medford, Ronald (NHTSA)
Subject: DP09-005 Docket

Please add the CAS submissions from January 15 and 19, 2010 to the petition file as well as the submissions earlier today.

We continue to develop addition information such as finding and photographing a 1997 Jeep Grand Cherokee with the reinforcement bracket designed to prevent disconnection or severing of the fuel lines through the frame rail & which also aided in moving the fuel tank over the differential. I am attaching one set of the first 6 of 24 photos to this email so that Ron Medford can see one example of what we are discussing.

Please let us know when the videotape of the Judson Estes deposition is added to the file & sent to GWU for inclusion in the electronic repository there.

Thank you for your cooperation in this matter which involves more know fire deaths in 1993-04 Jeep Grand Chrokees than known unintended acceleration deaths in Toyota to date.

Clarence Ditlow
Executive Director
Center for Auto Safety
1825 Connecticut Ave NW
Washington DC 20009

Howell, Rosa (NHTSA)

From: Clarence Ditlow [cmdiii@autosafety.org]
Sent: Tuesday, February 02, 2010 12:48 PM
To: Hershman, Larry (NHTSA)
Subject: DP09-005 Docket
Attachments: Estes 20050527 Vol II.txt; Estes 20050526 Vol I.txt

Attached is a text version of the Estes Deposition for insertion in the docket of DP09-005. Please let me know if you have any problems opening these files.

Clarence Ditlow
Executive Director
Center for Auto Safety
1825 Connecticut Ave NW
Washington DC 20009

DP09-005

MEMO 2-2-2010

ATTACHMENT ESTES 20050527

VOL I

SUPREME COURT OF THE STATE OF NEW YORK
COUNTY OF NEW YORK

NATASHA AUSTIN AND NICOLE AUSTIN,

Plaintiffs,

-against- Index No. 10215/00
Volume I

DAIMLERCHRYSLER CORPORATION, WESBURY JEEP EAGLE, INC., MARIBEL ORTIZ, AS INTENDED ADMINISTRATRIX OF THE ESTATE OF JOSE A. SIERRA, DECEASED, GRACE H. EVANS AND LISA N. EVANS,

Defendants.
_____/

The videotaped deposition of JUDSON B. ESTES, a witness in the above-entitled matter, taken before Melinda S. Moore, (CSR-2258), a Notary Public, at 840 West Long Lake, Suite 200, Troy, Michigan, on May 26, 2005, commencing at or about 1:58 p.m.

APPEARANCES:

Greene, Broilett & Wheeler
BY: CHRISTINE D. SPAGNOLI
100 Wilshire Boulevard
Suite 2100
P.O. Box 2131
Santa Monica, California 90407-2131

Appearing on behalf of Plaintiffs

APPEARANCES, Continued:

Herzfeld & Rubin
BY: MAUREEN FOGEL
40 Wall Street
New York, New York 10005

Appearing on behalf of Defendant
DaimlerChysler Corporation

Chrysler Corporation
Office of the General Counsel
BY: GREGORY D. McMAHON
800 Chrysler Drive
Auburn Hills, Michigan 48326

Appearing on behalf of Defendant
DaimlerChrysler Corporation

VIDEO TECHNICIAN:

JAMES WALKER, Reitman Video Specialists
(248) 344-4271

TABLE OF CONTENTS

EXHIBITS, continued:

Deposition Exhibit No. 7
Safety Test, Vehicle
Crash Test Letter
re: VC5380
(Dc 04052-71)

Troy, Michigan
May 26, 2005
* * * * *

VIDEO TECHNICIAN: Today's date is May the 26th, 2005, and we're on the record at 1:58 p.m. This is the video deposition of Mr. Judson Estes, and we are at the offices of Miller, Canfield in Troy, Michigan. This is the matter of Austin vs. DaimlerChrysler, et al.

Could counsel put their appearance on the record, please.

MS. SPAGNOLI: Christine Spagnoli representing the plaintiffs.

MS. FOGEL: Maureen Fogel from the law firm of Herzfeld & Rubin representing DaimlerChrysler Corporation.

MR. McMAHON: Gregory McMahon for DaimlerChrysler.

* * * * *

J U D S O N B. E S T E S

after having been first duly sworn by the Notary Public, was examined and testified on his oath as follows:

* * * * *

EXAMINATION

BY MS. SPAGNOLI:

Q Could you tell us your name, please.

A My name is Judson Bert Estes.

Q And are you currently an employee of the DaimlerChrysler?

A Yes.

Q Where are you physically housed?

A In the Auburn Hills DaimlerChrysler Technical Center.

Q How long have you been employed by DaimlerChrysler?

A Nineteen years.

Q So that means you predate the merger between Chrysler and Mercedes-Benz?

A Yes.

Q Okay. What is your educational background?

A I have a bachelor's degree in physics.

Q Okay. From where did you get your degree?

A Wayne State University.

Q And when did you finish that degree?

A 1986.

Q What positions have you held since you became employed at Chrysler?

A I started in the impact crash film analysis area and I progressed to the impact analysis at Chelsea

Proving Grounds, and then I went from Chelsea to Jeep and Truck Engineering, where I was in vehicle crash test program management. I went from there to the Jeep Assembly Plant in Toledo. I went back to Jeep Engineering in Detroit, where I was design and release for our seat belts and steering column, and then my most recent assignment was at Auburn Hills in the corporate quality.

Q Okay. For what period of time did you work in impact analysis? And I would take that up to your time before you went to the Jeep Assembly Plant in Toledo.

A I was in impact analysis and impact test, running in one capacity or another, from 1986 until 1998.

Q Okay. And since you've -- let me withdraw. You said you went to the Jeep Assembly Plant in Toledo. What did you do at that plant?

A It was called interior leader, and that's a responsibility for the interior parts of the XJ Jeep vehicle.

Q And then when you came back to Jeep Engineering in Detroit, you said you were a design and release engineer for seat belts and steering columns; is that right?

A Design and release supervisor for seat belts and

steering columns.

Q Okay. So with respect to specifically any role that you've had that involved impact analysis or crash test analysis, that's from your early days up through 1998; would that be correct?

A Yeah. I think it's '98 when I stopped.

Q Okay. And during your time in impact crash analysis or vehicle crash test program management, during that time did you have a role in reviewing and preparing and running crash tests that involved various Jeep Cherokee and Grand Cherokee vehicles?

A Yes, I did.

Q Can you tell us what the earliest vehicle, Jeep vehicle you were involved with as far as crash testing?

A The '96 Grand Cherokee.

Q Okay. And when did you work on the '96 Grand Cherokee, during what period of time?

A Previous to its launch, the '96 Grand Cherokee, in late '94 through through mid-'95.

Q Okay. And then were you also involved in crash test performance and analysis involving the 1997 Jeep Grand Cherokee?

A Yes, I was.

Q Tell us, if you can, just generally what the

procedure is for requesting a crash test, in other

words, who initiates the testing request.
A The test request is written by the vehicle development crash test engineer, and that initiates the crash test sequence.
Q And then does that request get transmitted -- and while you were at the impact analysis center, does that get forwarded to the crash test management program to then set up the test?
A The test request gets sent to Chelsea Proving Grounds in order for it to become on the schedule for the crash tests.
Q And then who actually arranges for the vehicles and gets the tests set up and performs the tests?
A The tests are performed by the Scientific Labs personnel at Chelsea.
Q Okay. And was that a role that you filled at some point in your career at Chrysler?
A Actually running the vehicle crash tests at Chelsea, I did not do.
Q Okay. Did you assist in making arrangements for crash tests to be conducted?
A I worked at Chelsea on the film analysis section for the full-size cars, the entire vehicle. All I did was the film analysis section while at Chelsea,

Q Okay. And your work in film analysis, just give us briefly a description of what you did with respect to that type of analysis.

A The film analysis works so that you can trans -- transform the camera into a transit and use the camera lens like a transit to identify unknown objects in the field of view. When the car comes in and is impacted, you don't know where it is so you take the cameras and transmit them into a transit and run a series of calculations to identify the location, the roll, pitch, yaw and the X, Y, Z of the camera, and take that data and then calculate where the car is relative to the ground and where things on the car or in the car are relative to the car axes coordinates, and so those coordinates are calculated, and that's what you do in film analysis, is set up the cameras, set up the coordinates and then calculate relative motion between the ground, axis of the coordinates and the targets of interest on the car are.

Q Okay. And does that assist you in verifying the speed of impact and the various --

A The speed of impact is verified with an electronic -- an optical trap timer.

Q Okay. The film analysis allows you to do what with respect to evaluating the performance of the

vehicle?
A The performance of the vehicle in a crash test, you can calculate the dynamic crush. That is the primary metric that's produced by film analysis.
Q Okay. And is dynamic crush routinely recorded in the crash test reports?
A Yes.
Q Okay. You said that you then progressed to impact analysis at the Chelsea Proving Grounds, and I believe you said that was on full-size vehicles that you did that work?
A The impact simulator at Chelsea, and that's not on full-size vehicles. That's on a much smaller version of it. The simulator uses only the interior of the vehicle.
Q Okay. And which vehicles did you work on when you were in impact analysis at Chelsea?
A So many, I can't recall them all.
Q Okay. Would these be things testing like the seat belts and seating systems and --
A Those are among the things that are tested on the simulator.
Q Okay. When you went to -- from Chelsea to Jeep and

Truck Engineering, what year did you start there?
A '94, as I recall.

Q And this is the beginning of your work managing the crash test program for the '96 and '97 Jeep Grand Cherokees?

A Yes.

Q Did you -- when you went to work in 1994 in the Jeep and Truck Engineering as the crash test program manager for the Grand Cherokee, at that time did you review and become familiar with the crash tests that had been performed on the earlier model Grand Cherokee vehicles?

A There is a process where you take the new engineer and explain to them what the status the program is in its development, and in that process you become familiar with the previous tests and what the status of the vehicle and its development phases are.

Q Okay. And so is 1994 when you first became familiar with any prior testing on the Grand Cherokee model vehicles?

A Yeah. Yes, that's the primary part where I started to be responsible for the Grand Cherokee testing.

Q Okay. So up until that time, even though you were in -- generally working in impact analysis, you had not been exposed to crash testing on the Grand

Cherokees that had occurred in the early 90's?

A I would have seen some of the films in the course of our analysis. The analysis that you perform, you

don't look at much what's on the film except for the targets of interest where you're trying to perform the work that was requested, so I had seen films, I'm certain, of which I cannot recall which ones because I never looked into the details of the film beyond the aspects of which I was focused on while I did the film analysis work.

Q Okay. And is there -- let me withdraw. Have you ever given a deposition before?

A Yes.

Q How many times?

A Twice, I think.

Q Do you recall the names of either case that you gave depositions in?

A No.

Q Did either case involve a Jeep Grand Cherokee?

A I believe one did, but I'm not real clear.

Q Okay. How long ago did you give the last deposition?

A A couple years ago.

Q Okay. When you first took over as vehicle crash test manager for the Jeep Grand Cherokee in 1994,

who had been responsible for the crash test program for that vehicle before you?

A My memory is a little unclear on that, and there

were two people in the office before me and when there was more work than the two guys could handle, it's unclear as to who was actually the signatory on that. I didn't sign the compliance documents which is the final responsibility. The manager I worked for, Ed Zylik, was responsible for the activities of those two men, but exactly which one of then was doing what before I got there, I couldn't say.

Q And who were the two people? What were their names?

A Vic Hannawi and Don Mallet would have been the two men that had some participation in it before I arrived.

Q And you were working with those people in the same department prior to 1994; is that right?

A No. I was not working in that department prior to 1994.

Q Okay. Were you -- your department of impact analysis would provide information for the crash test impact management people? Is it the impact department?

A The Impact Analysis Group provided the requested film analysis to the program managers in Vehicle

Development, then some of the design and release engineers for the Restraints and the Structures Group.

Q Okay. And the crash test management people

interacted with who with respect to the work that they were doing, same people?

A The crash test management people interact with the Proving Grounds scheduling groups and the design and release engineers to obtain the proper build level parts to build the vehicles to test.

Q Okay. Do the crash test management people actually provide feedback to the program managers on the results of the tests?

A Yes, they do provide feedback to the program managers on the status of the impact test program.

Q Okay. So when -- as a manager of a crash test program, when you run a test, you provide a report to other people, right?

A No, no. Actually each test does not generate a report beyond the Vehicle Crash Test Letter. Typically the program is managed at a level that doesn't generate a report for each and every car that you run.

Q Okay. So the Crash Test Letter is done for each and every test you run, though?

A Yes, ma'am.

Q And the Crash Test letters are signed by the or -- by the crash test manager?

A I don't believe they're signed by the manager. I

think they're issued by the crash test engineer at Chelsea.

Q Okay.

A I never did that job but I believe that's where they come from.

Q Okay. And do the Crash Test Letters go to the crash test managers?

A The program managers in crash test receive the Crash Test Letters.

Q Okay. So when you were the vehicle crash test manager for the Grand Cherokee, you got the Crash Test Letters?

A Yes, ma'am.

Q And then when you got those, you would then provide those to the program development engineers and the release engineers?

A Typically you wouldn't provide them the letters; you would talk about a specific result or how the vehicle performed and how -- if the vehicle was going to be modified as a result of those tests. The letters themselves are typically looked at for

the information content they carry and then just that information goes forward, did it pass the test, what was its score, what did it get for crush. That kind of stuff is what's moved forward. The letter itself typically doesn't get a very wide

distribution. I'm sure you have a copy of the letter and you can see on the end there's three or four names typically on a Vehicle Crash Test Letter, and that's who it gets distributed to automatically.

Q Okay. And when you say that the information -- and you described the information that would get passed on to the development and release engineers -- would that be done orally or would you do it in a writing?

A Almost always orally in a meeting.

Q Okay. Were there regular meetings held to follow up when crash tests were done on --

A Yes.

Q And then you as crash test manager for a particular vehicle would go to the meeting along with the development and release engineers?

A Yes.

Q And then would there -- would you have a discussion what to do next, something need to be changed or --

A Yes. There would be an engineering problem-solving task, and we would work through it with the group

there, using their engineering expertise and experience in impact test as to what, if anything, should be done to the vehicles.

Q Okay. As the vehicle crash test manager for the Jeep Grand Cherokee, did you have some guidelines

that you used in evaluating a performance of the vehicle on a crash test?

A Yeah. Yes, there are guidelines.

Q Okay. What guidelines can you recall using in the '94, '95 time period as it related to the analysis of the Grand Cherokee's crash test performance?

A The primary metrics that we used for 208 compliance we had said we wanted to have a 20 percent margin underneath that, and that was basically our guidelines for evaluating performance, were we under our margin, under the federal requirements.

Q Okay. And you mentioned specifically 208.

A That's the primary impact test work.

Q And that -- when you say 20 percent, 20 percent below what, the level of injury criteria?

A There are, in 208, required injury criteria. It's 20 percent below the required level where we were targeted at.

Q All right. And was that a guideline or was that a policy of the company?

A It was not a written policy at that time.

Q Okay. But it was your standard practice?

A It was our standard practice.

Q And did you have a guideline or a policy with respect to fuel system performance in the '94 and '95 time period?

A In the 301 tests, we wished that the fuel system would have zero leaks, and if they had any leakage at all, we considered that to be a failure. In that the 301 system allows, you'd have five ounces of fluid leakage, any fluid leakage in our test was considered to be a failure, and we would rerun the test and modify it to avoid any leakage.

Q Okay. In the '94 and '95 time period was there any guideline or criteria with respect to contact between the fuel tank and components such as the axle, shocks, rear suspension?

A No, at that time there wasn't any written guideline.

Q Was there an understood guideline that -- similar to the 20 percent injury criteria for the 208 test?

A What we wanted to do was to get the vehicle to perform up to the standard and exceed it in terms of leakage, and there are certain things you don't want to introduce in the field around the gas tank. We didn't want to have any sharp edges around the gas

tank. We wouldn't want to have any things that came to a point either in a fold or as a mechanical device, but in terms of contact itself, there weren't any guidelines regarding what it should and shouldn't run into, but more along the lines of the shape and formation of the things that it came in

contact with.

Q Did you have an understanding that if you saw contact but it didn't produce a leak that that would be investigated further by the development or release engineers?

A I think in the broadest terms of contact, no, because it's -- it is trapped between two pieces of metal and it is always in contact, so just contact, no; it was contact with a specific item that has like, I said a sharp edge or ability to pierce. Those kinds of items where they had contact, we investigated further.

Q In your test reports that the test engineers did and then gave to you as the vehicle test -- crash test manager, were the engineers running the tests asked to document things that they saw that they wanted to alert the downstream people to?

A If it's -- if you run the test and there's a visible problem, then the guys at the proving grounds,

whether they were the engineers or the union mechanics in build-up and tear-down for that, were instructed to write on their report what they could see. In vehicle crash tests there are a lot of things that you can't see. They get folded, they get compressed, they are hidden from view, and so some of the tests, they'll say, it had a failure, we

don't know why, and some of them they'll say it had a failure and you can see it without disassembly, and write down that reason.

Q Did you ask them, though, typically if they saw something, to note it in the crash test remarks section?

A Yeah, if it's visible and you can see it without disassembling -- they were very well instructed not disassemble the vehicle -- then that was in the remarks.

Q And the remarks then would include observations that might raise a concern about the vehicle's performance on the test?

A They might.

Q Were there any particular things that the engineers were asked to note that ran the crash tests?

A I think that there wasn't like a list or there wasn't a series of guidelines. I believe that you

rely on the engineer's good judgement and his training to recognize things that were hazardous, and experience basically tells you is it a sharp edge, has it got a point, in terms of the fuel systems, and there are areas where you want to look to see is the vehicle performing the way I intended it to on the structure of the vehicle, did it have

structural things you can tell, did it perform -- are the welds connected, you know. These are the kinds of things that an engineer, when they review a vehicle, would look for to determine its performance.

Q And then those notes would be -- trigger someone taking a look and seeing whether further investigation needed to occur?

A Yeah.

Q Okay.

A If they were written in the test letter.

Q Right.

A I'm going to get a glass of water.

Q Let me ask you to take a look at a document we marked earlier today. It's Lazarus Exhibit 10. It says Fuel Systems & Impact.

A Thank you.

Q Have you ever seen this before?

A No.

Q Okay. If you would like to take a moment to look through it, do you know who Ginny Fischbach is?

A I know Ginny Fischbach.

Q Is she someone that you've worked with?

A Yes.

Q In what capacity?

A She was a manager for the truck impact program.

Q Okay. Is she someone that you interacted with while you were in Impact Analysis?

MS. FOGEL: Objection to the form.

THE WITNESS: The -- Ginny Fischbach, I met her first when I came to the Jeep/Truck Engineering Group to do impact management.

Q (BY MS. SPAGNOLI): Okay. And what was -- what was the nature of your interaction?

A She was a manager in a parallel program on parallel vehicles and sat about 20 feet from me.

Q Okay. I would like you to take a look at this, and I'm going to ask you to focus on a couple of specific pages, but just generally let me know when you've had a chance to kind of flip through it and become familiar with the document.

While you're looking, I'm going to go ahead and mark a copy of this document as Estes Exhibit 1.

Okay? Having reviewed this document, does it appear to contain test procedures and protocol that existed during the time that you worked as the vehicle crash test manager for the Grand Cherokee?

A Yeah. After my cursory review here today, it does appear to contain the same kinds of processes that I ran.

Q Okay. And if you look at Proposed Legislation, the

page that has that heading, under 5125, do you see at the bottom bullet point it says, "Rule making not expected until late 1997??

A Yes.

Q And that would appear to place this document at some time predating 1997. Is that a fair understanding of what we have here?

MS. FOGEL: I'm going to object to the form.

Q (BY MS. SPAGNOLI): Go ahead.

A It seems very speculative, but I don't know.

Q Is there anything in what you reviewed in this document that appears to you to be a procedure or policy that was not in place in 1994 or '95, '96?

MS. FOGEL: Objection to the form.

THE WITNESS: I haven't had time to really absorb all of it, and I can't say for sure whether

there's anything in here that I did or didn't normally do. I'd like to really read through it.

Q (BY MS. SPAGNOLI): Yeah. Well, why don't we go ahead and take a break and let you read through it with the understanding that I'm going to ask you that question when we come back from the break, and so I'm going to ask you to point out things that you do not believe were policies or procedures prior to 1997, so between '94 and '97, okay?

MS. FOGEL: May I hear the question read back again, please.

(Record read as follows:

"Q Is there anything in what you reviewed in this document that appears to you to be a procedure or policy that was not in place in 1994 or '95, '96?")

Q (BY MS. SPAGNOLI): Okay?

MS. SPAGNOLI: So we'll go off the record.

MS. FOGEL: I'm going to object to the form, and I just want to say also an objection to the form, it assumes things that have not been placed into evidence, and that was my objection to the form.

MS. SPAGNOLI: Okay. Let's go off the

record and I'll ask you to take a closer look and --

THE WITNESS: Is there any specific areas out of these 30 pages that you want me to really look at?

Q (BY MS. SPAGNOLI): Well, it's actually -- I realize it's a lot of pages, and I think it's 15 pages all together, and it's a presentation form, so it's actually not a lot of information per page, so I really want you to just take a thorough look at it

and tell me if there's something that stands out to you as not being a policy or procedure in place between 1994 and the end of 1996; okay?

VIDEO TECHNICIAN: Going off the record at 2:30 p.m.

(Off the record.)

VIDEO TECHNICIAN: We are back on the record at 2:32 p.m.

MS. FOGEL: I also just want to state an objection for the record that this document was the subject of some questioning by DaimlerChrysler through Robert Banta, and is a document that has been described by the witness as one that he has never seen before. The purpose that we're here for today with regard to DaimlerChrysler's deposition by additional witnesses is to fill in the gaps of the

information that the plaintiffs represented Mr. Banta was unable to respond to. To now show a document to a witness that he has never seen before, one which Mr. Banta was able to respond to, is outside the parameters of what we're here for today. That being said, we'll allow the witness answer.

MS. SPAGNOLI: Okay.

Q (BY MS. SPAGNOLI): And, again, Mr. Estes, I'm asking you to discuss this document in the context of your position in '94 and '95 and '96 as the

vehicle crash test manager for the Jeep Grand Cherokee which is the vehicle involved in this incident and that we're here about, and so now you've indicated off the record that you had an opportunity to review the material that's presented here, and you made a statement before we went on the record and I just want to get that on the record.

Having reviewed this document, do you believe that the items in it reflect policies and procedures that were in place during 1994, 1995 and 1996 when you were the manager of the vehicle crash test program for the Grand Cherokee?

MS. FOGEL: Objection to the form. You can answer.

THE WITNESS: I agree with the philosophy

and techniques that's put forth in this document.

Q (BY MS. SPAGNOLI): Okay. If you take a look at Fuel System Design for Safety -- it's page 5126 and 5127 --

A Uh-huh.

Q -- the first bullet point says, "Absolute vs potential test failure." Can you explain what that means?

A No. I don't know what exactly she meant there.

Q Okay. Do you have -- have you used the term

potential test failure in the course of your work as a crash test manager?

A No, no, neither one of those terms is common.

Q "The first point under that heading says, "design for zero leakage," and you've told us that was your expectation and guideline for the 301 test, correct?

A Uh-huh.

Q And then the next bullet point says, "contact with unfriendly surface is unacceptable." Is that an accurate statement of your policy at that time?

A Yeah. As I said before, I tried to define unfriendly in a more technical way, but, yes, unfriendly surfaces are unacceptable.

Q And then the next point says, "any contact with tank accessories is unacceptable." Can you tell us what

that meant?

A I've never heard it termed as tank accessories quite that way before, and so I'm unclear exactly what that includes. I would have probably gone for a different description, I think, of what I think it includes, but I wouldn't have said accessories. It sort of seems like it was a garnish more than a required part.

Q Okay. What part -- what would you have described instead of using the word accessories, components?

A Components, subsystems. There's a fuel pump system

on top. There's a vent on system on top of it, and contact with those is unacceptable.

Q Okay. On the next page, under Fuel System Design for Safety, there's a bullet point that says, "Test issues and post test inspection," and the first item on that list says, "check for secondary problem areas." What does that mean to you?

A I don't know what she meant to say there.

Q Okay. The next item says, "be careful not to discount as 'anomaly.'" Does that have a meaning to you?

A That does have a meaning to me. Because of the small sample size in vehicle crash tests, it happened in one car and I never saw it before, some

people will say, oh, that's an anomaly in a lot of testing, engineering testing where they have larger samples, sometimes the word anomaly or a flyer. That is a response that as the vehicle crash test program manager you can't allow. If it occurred once in any test, you have to design out that flaw.

Q Okay. The next item says, "check for post test springback." Can you tell us what that means?

A Metal, especially when in complex shapes, when compressed and deformed beyond its limit, will return to its previous shape once the force that

compressed it or distorted the metal is removed, and you can see like a bow where things bent and touched, and now after the test, they're separated, and you have to look for those areas where in the dynamic crush of the test contact might have been made but is not currently in contact.

Q Okay. And where you see those types of contacts that may have occurred during dynamic crush, is that also something that you then follow up and do further investigation?

A Yes.

Q Okay. And then "inspect for any contact with the fuel system," that seems to be kind of a catch-all, and that is what you're looking for, correct?

A Yes.

Q Okay. I'm next going to show you a document that was previously marked as Exhibit 8 to Mr. Lazarus' deposition, and I will mark this as Exhibit 2 to your deposition.

A This one?

Q Yeah, thank you. I'm going to grab my copy here. This is a Design Guideline - Fuel Supply. It has a date of January of 1999. Have you ever seen this document before?

A No, I have not.

Q Do you know who Mark Olex is?

A No, I do not.
Q Okay. Did you provide any input for the development of a written design guideline for fuel systems?
A No, I did not.
Q Okay. I'm going to ask you to take a look, if you will, at -- under item number -- on the second page, there's a heading Packaging Clearances. Do you see that?
A Yes, ma'am.
Q And item No. 6 says, "Axle, bumper, shock, strut and unfriendly surfaces." Okay? Are you with me?
A Yes.
Q Okay. The second sentence says, "No contact should

occur between these components and the tank during the impact event." Have I read that accurately?
A I believe you have.
Q Okay. Is that statement an accurate reflection of the guideline that you operated under while serving as the manager of the crash test program for the Jeep Grand Cherokee starting in 1994?
A No, it's not.
Q Do you have an understanding of when that guideline, became a guideline, if at all, within Chrysler?
A No, I don't. This is the first time I've seen it, and it's dated 1999.

Q Okay. You told us that you left your position as manager of the crash test program for the Grand Cherokee in '98; is that right?

A Yes, ma'am.

Q And since then have you had any responsibilities for evaluating impact performance on crash tests?

A No, I have not.

Q Okay. Have you reviewed any documents in preparation for your deposition today?

A Yes, I have.

Q What did you look at?

A I looked at compliance reports and Vehicle Crash Test Letters.

Q Do you have a list of the reports that you looked at?

A I do not.

Q Do you have an estimate of how many you looked at?

A I would guess it would be four or five.

Q And do you have copies of the ones that you looked at?

A No, I do not.

Q When did you look at the reports?

A Yesterday.

Q Okay. Did you select them yourself or were they given to you to review?

A They were given to me.

Q Okay. Can you recall any particular test that you looked at? Is there something that you were asked to review and then you have a recollection sitting here today of what test it was and -- that you looked at yesterday?
A It was a series of rear impact tests and development and compliance for the ZJ Grand Cherokee.
Q Were the tests that you looked at ones where the vehicle had leakage?
A Some of them did have leakage, yes.
Q And in those cases -- in those test reports that you looked at where there was leakage, did you try and

recollect the test and whether you could recall what -- why there was leakage?
A Yes, I did.
Q Were you able to do that on any of the tests you looked at?
A On some of them I did remember quite specifically what happened in the test.
Q Okay. And other than reviewing the test letters themselves, was there anything else you looked at that helped you recall the events of any particular test?
A As I stated before, we looked at the test letters and the vehicle crash test request, which is

basically the precursor to the test letter which is after, and the compliance documentation for 1996 and 1997.

Q Okay. Let's start with the compliance documentation. I'm first going to show you a Compliance Report which we will mark as Exhibit 3 to your deposition. Is this Exhibit 3 that I've presented to you the Compliance Report for the 1996 ZJ-body Jeep Grand Cherokee that you reviewed yesterday?

A Yes, it appears to be the same.

Q Okay. Okay. And just to orient us to what we're

looking at, in this -- in this report you signed the fuel system integrity section as the product engineer on July 12, 1995, correct?

A Yes, I did.

Q And does this report contain the actual crash test letters and requests for the crash tests that the compliance decision was based on?

A It appears to. I haven't gone through all of them. Yes, they appear to be here.

Q Okay. And with respect to the vehicle that was being certified as being in compliance with the fuel system safety requirements, this was a 1996 ZJ-body Jeep Grand Cherokee, and there's a description of the vehicle characteristics on the third page of the

document; is that right?
A Yes.
Q In the 1996 model Jeep Grand Cherokee, were there any changes in the frame rails of the vehicle from the prior year model?
A I don't believe there was. That would have been brought up in our development, and I don't believe there was.
Q Okay. Is that -- if a change in the material or the configuration of the frame rails had been made from the '95 model to the '96 model, is that an item you

would have expected to be documented in the summary here regarding the compliance of the vehicle with the fuel system standard?
A If the changes were significant and of a large enough level, they should be listed on this discussion page.
Q Okay. If it was a change that would be expected to affect the performance of the vehicle on the crash tests, it would be noted; is that right?
A Yeah.
Q Okay.
A Yes, ma'am.
Q And in this case we don't see any reference to any changes in the frame rails between the '95 and '96

model years, correct?

A No.

Q Am I right?

A There is no reference to the frame rails.

Q Okay. There is a reference to a change in the fuel return line between the 1995 and 1996 model years, correct?

A Yes.

Q Do you have a recollection of what that change was?

A No, I don't. That occurred before I was there.

Q Okay. You mean the change occurred before you were

there?

A Yes.

Q Okay.

A It indicates it had changed in the 1995 model year, and I came on to test the '96 model year vehicle.

Q Okay. And this report is the result of those tests, correct?

A The 1996 test.

Q Right. Now, in connection with the rear impact performance of the '96 Grand Cherokee, if we look at page 6, does that contain the crash tests that supported your verification that the vehicle was in compliance with the standard?

A Page 6 contains the two rear impact crash tests that the compliance document relies on.

Q Okay. So in the case of the 1996 Jeep Grand Cherokee, am I correct in understanding that you, as the engineer who certified compliance, relied upon a 1991 and a 1992 rear impact test?
A Yes.
Q And those would have been tests performed on the first model year of the Grand Cherokee; is that right?
A They appear to be in the first model year. I did not run those tests myself.

Q Okay. Did you review those tests before certifying compliance of the '96 model year vehicle?
A The vehicles, I did not review. We looked at the film and the electronic data, and I spoke to the engineer before who had written this, Ed Zylik, the early ones, and that was the review that I conducted.
Q Okay. And you then gathered and attached the relevant documents from those tests --
A Uh-huh.
Q -- with your report that you signed in July of 1995, correct?
A Yes.
Q And if we look in the attachments then, if we first look at test 4561, do you see that if you go -- oh,

the pages aren't numbered, I'm sorry to say, but about midway through, I see the Safety Test, Vehicle Crash Test Letter for test 4561, 30 mile per hour rear barrier impact, if you could find that page.

A You're looking at the Vehicle Crash Test Letter for 4561?

Q Correct.

A Yes, I have it.

Q Okay. Now, this vehicle, which is one of the two crash tests that you relied upon to certify the '96

Jeep Grand Cherokee as being -- having complied with the 301 rear impact crash test requirement, involved a vehicle that was a C1 pilot, correct?

A Yes, ma'am.

Q And a C1 pilot is a vehicle that has been built to production but is before the actual production models are coming off the line; is that right?

A The -- as I recall, the C1 pilots are what we called line fill, and they were the pilot cars that are first built as you fill the entire plant manufacturing system, and some of them come off and then you use them for a variety of tests.

Q Okay. In this case the vehicle had at least one nonproduction condition, and that was the rear prop shaft was one inch short. Do you see that?

A Yes.

Q Do you have some understanding of what that meant?
A Yeah. I think that the tube that connects the transfer case with the rear axle was not as long as it was intended to be in production.
Q Okay. And what would that mean with respect to that part's proximity to fuel system components? Would there be more clearance in this vehicle than on a production vehicle?
A No, there wouldn't be. That prop shaft is attached

to a spline, and what it is is it slides in and out of the spline, and the length of the prop shafts are a dynamic thing right at launch, and they're often changed due to the ride and handling characteristics that the last group that touches the car before it goes into production wants, so the fact that it's a little bit shorter or a little bit longer, it still rides on that spline and it's within more or less the exact same place that it would be, no matter what the length is. It only is how far it rides on the spline of the rear axle at suspension travel.
Q Okay.
A So when this is at full weight, the vehicle will compress the suspension and it will go as far back on the spline, probably no matter what length it is.
Q Okay. Now, if we look at the other test, rear

impact test that was used to certify compliance, 4472 -- if you could find the Crash Test Letter for that.

A I don't find it in this package.

Q Okay.

MS. FOGEL: It should be six pages back -- no, no, sorry. I didn't mean to interject, but I just saw something with 4472 on it.

MS. SPAGNOLI: Yeah, actually it's not the

Safety Crash Test Letter.

Q (BY MS. SPAGNOLI): There is one page of an inter company correspondence dated 12-20-91 that is a few pages past the 4561 letter that we just looked at, and it says "To distribution." Do you see that?

A Yes, I do.

Q What is this?

A This is the dynamic crush analysis from the film.

Q Okay. Does this at least tell you what the build condition of the crash test vehicle was?

A Yes.

Q And do you see that this vehicle for test 4472 had a trailer towing package?

A Yes, I do.

Q Do you have an understanding of what -- what the trailer towing package involved, what components would be attached to the vehicle?

A Yes.
Q Can you explain?
A The trailer towing package should be a U-shaped bracket that has two arms that go fore-aft along the car on the rear body-in-white rails and a cross piece that has mounted onto it a receiver hitch for a Reese hitch.
Q Is it your understanding that with respect to these

1993 model Jeep Grand Cherokees, that the trailer towing U-shaped bracket provided some structural rigidity to the frame rails that assisted the vehicle in meeting the 301 crash test requirement?
A Could you repeat that question?
Q Sure. Is it your understanding that with respect to the 1993 model Jeep Grand Cherokee that was reflected in this test 4472, that the trailer towing bracket that you've just described provided structural rigidity to the frame rails that assisted the vehicle in meeting the 301 rear impact test requirement?
A The trailer hitch provides a structural rigidity. All rigidity is not of a benefit, if it increases the stiffness of the vehicle, and often increases the g forces experienced by the vehicle, because it no longer absorbs the energy through crush, so I

wouldn't want to categorically state that the rigidity assisted it in passing.

Q Did you form an understanding that the trailer hitch bracket that was attached to the vehicle tested in crash test 4472 allowed the vehicle to sustain less rear crush and, therefore, allowed the fuel tank to survive the impact without leaks?

A The crush is merely transported to another place.

When you reinforce the one area of the deck, the energy is still going to be absorbed by the vehicle, and it will be transported to the kick-ups in this particular design.

MS. SPAGNOLI: Move to strike as nonresponsive.

Q (BY MS. SPAGNOLI): Do you need to hear my question again?

A Sure.

Q Did you have an understanding that the trailer hitch bracket that was attached to vehicle 4472 allowed the vehicle to sustain less rear crush and, therefore, allowed the fuel tank to survive the test without a leak?

MS. FOGEL: Can I hear the answer read back, please, also.

(Record read as follows:

"Q Did you have an understanding

that the trailer hitch bracket that was attached to vehicle 4472 allowed the vehicle to sustain less rear crush and, therefore, allowed the fuel tank to survive the test without a leak")

Q (BY MS. SPAGNOLI): Can you answer my question, please?

A When you put the reinforcing bracket on there, the crush in the vehicle will still absorb the entire energy of the impacting vehicle, the 301 target trailer. The crush in the car will still occur; it just occurs in a different spot.

Q And in occurring in a different spot, did it allow management of the crush so that the fuel tank would not be compromised in the test?

A The fuel tank is not compromised in either test with or without the trailer hitch, and the trailer hitch doesn't allow for compromising whether it's there or not.

Q So is it your opinion based on your review of these tests -- and, of course, we don't have the test report for the 4472 here -- that the vehicle was able to comply with the rear impact crash test requirement without any reinforcement of the frame rail?

A The previous vehicle, 4574, shows that it was built without a trailer hitch.
Q I think it was actually 4561.
A Okay. Let me find that one.
Q Okay.
A Does that vehicle have a trailer hitch on it? I think that's the answer to your question. Could you

repeat the question then?
Q Sure. Is it your opinion from your review of the documents that we're looking at here for these two tests that the '93 Jeep Grand Cherokee did not require reinforcement of the frame rail in order to comply with the 301 rear impact test requirement?
A The '93 Jeep Grand Cherokee did not require reinforcement of the rear frame rail to pass the 301 rear impact requirement.
Q Okay. If you look at the document for 4472 that we've just looked at, do you see that there's a build condition that says, "Rear axle with track bar bracket shield?" Do you know what that is?
A No, I don't.
Q Did you have some understanding that that shield was put in place in order to allow the vehicle to pass the 301 rear impact test requirement because there had been tank contact and leaks in vehicles that did not have that shield?

A No, I didn't understand that that's the purpose of that shield. Track bars are typically a very friendly surface.
Q Did you hear anything when you became manager of the crash test program for the Jeep Grand Cherokee in 1994 that the Grand Cherokee had had problems

passing the 301 rear impact test in 1992?
A No.
Q Did you hear anything about leaks that were resulting in the development crash tests in the Grand Cherokee before it was certified for compliance?
A In the '92, '93 time frame?
Q Right.
A No.
Q I'm going to mark as Exhibit 4 a December 3, 1990 Status Report, Platform Engineering/Jeep Truck Engineering, 1992-1/2 Model Year ZJ Rear Impact Validation Test. There's a paragraph on the bottom of the first page that I'd like you to read.
MS. FOGEL: Before you have the witness read it, would you be so kind as to ask him if he's ever seen it before?
MS. SPAGNOLI: Sure.
Q (BY MS. SPAGNOLI): Why don't you read it to

yourself and let me ask you if you have heard or seen this -- well, first of all, if you've ever seen the document.

A No, I've never seen this before.

Q Is this a report that would have been available to you when you became manager of the Jeep Grand

Cherokee crash test program?

A Typically development tests like this would not have been available to me. It was issued from the Structures Laboratory, and that's -- that is outside of where I was working. The Structures Laboratory is not in Vehicle Development, and this report probably wouldn't have been part of the Vehicle Development documents.

Q Okay.

MS. FOGEL: Again, I'm going to object to having the witness read sound bites from the document. He's testified that he's never seen it before, and it's outside the parameters of what his deposition is here for today based on representations to the court why Mr. Banta's deposition wasn't sufficient.

MS. SPAGNOLI: Well, I think he's here today to talk about the performance of the Jeep Grand Cherokee in crash testing. I think I'm entitled to know whether anyone informed him before

he took the job in 1994 that the ZJ rear impact validation testing had demonstrated fuel tank punctures from an unfriendly corner on the track bar mounting bracket in the first model of the vehicle. I'm entitled to know whether that's something he was

aware of when he took over the program, or are you saying that I'm not entitled to know that?

MS. FOGEL: What I'm saying is you just asked him if he ever saw that document before and he testified that he didn't.

MS. SPAGNOLI: Okay. Then I'll ask the next question.

Q (BY MS. SPAGNOLI): Did anyone tell you when you took on the job as manager of the crash test development program for the Grand Cherokee that the program level ZJ vehicle had been subjected to rear impact validation tests to verify conformance to Federal Motor Vehicle Safety Standard 301 and that the vehicle did not meet the FMVSS 301 requirements because the fuel tank was punctured by an unfriendly corner on the track bar mounting bracket?

A No. There were probably many changes of the nature like this that I was not told of. Once they're instituted in the vehicle, they become current production intent, they're typically not carried

forward.

Q Okay. So the fact that that had occurred in the development of the vehicle before it was put on the market and validated by your predecessor for the 1993 model year was not something that would have

been, you believe, felt to be important to bring to your attention; is that right?

A It appears to me, based on this document that you have just showed me now, that the fuel tank issue that was caused by the track bar mounting bracket was modified and fixed.

Q Okay. And do you know if that modification or fix is the addition of the track bar bracket shield that is referred to in the letter regarding test 4472?

A I cannot say that with certainty, but I assume that.

Q Kind of sounds like it's connected to that earlier issue; is that right?

A Yes, it does appear to be that way.

Q Now, if you look further back in the documents -- I'm looking at the Fuel System and Static Rollover Summaries -- for the tests that were attached as part of your Compliance Report for the 1996 Jeep Grand Cherokee -- do you see -- can you locate for me the Fuel System and Static Rollover Summary for test No. 4472?

A Yes.

Q And can you read for me what the post-test condition notes are that were written in that summary.
A Not very well. I believe it says, "Contacted by track bar bracket left front corner. Contacted by

differential housing on rear." It's hard to believe that says rear. There's another mark I cannot interpret.
Q Okay. And the differential housing would have been forward of the tank, correct?
A Yes.
Q And the contact by the track bar bracket left front corner is exactly the same type of contact that's referenced in the development report that we looked at, Exhibit 2, correct?
A I believe that that's exactly where they added the shielding to prevent the tank from being punctured, yes.
Q Okay. And you're assuming that based upon the fact that this note indicates that there was contact in that location?
A Yes. That says "The bracket," and on the same side it has, "This bracket has been modified," and then earlier in the design it talks about a track bar shield. I believe they're all the same part.
Q Okay. So based on reviewing these documents, am I

correct in understanding that the test 4472, there was contact between the tank and two different components of the vehicle in this test?

A That's what's noted in the test summary.

Q Okay. And if you could now flip to the test summary for test 4561, also for this test, also was used to certify compliance of the 1996 Jeep Grand Cherokee, and we -- have you found that page?

A Yes, ma'am.

Q Okay. And can you read for me what the notes are in the Post Test Condition next to Tank.

A This one says, "Contacts: Bumper, TRK bar, TRK bar BRKT [and] tailpipe, axle."

Q Okay. Is that tailpipe comma axle?

A I think it is a comma.

Q Okay. So in the case of test 4561, which you used to certify compliance of the 1996 model Jeep Grand Cherokee with the fuel system standard, there were, in fact, contacts, multiple contacts between the tank and components of the vehicle; is that right?

A It indicates there were multiple areas in contact with the tank.

Q We have bumper, the track bar, the track bar bracket, the tailpipe and the axle. Those are five different locations of contact, correct?

A Yes.

Q And then under Straps, can you read what's written there.
A It says, "Left J-hook slipped out of slot."

Q What is a J-hook?
A There is a hook that holds the strap in place in contact with the body-in-white.
Q Does that mean that if the hook slips out of the slot, the tank would become loosened?
A It would become -- the straps, when it's in its design condition, hold the tank in place. In the impact test, typically the distance between the two strap ends, which are held with J-hooks one end and a bolt on the other, become foreshortened. There's crush and it would not be unusual for the J-hook to move relative to the body in the slot.
Q But it usually doesn't slip out of the slot, right?
A It's not -- occurs 100 percent of the time, but it's not unusual for the J-hook to have moved within its slot.
MS. SPAGNOLI: Move to strike as nonresponsive.
Q (BY MS. SPAGNOLI): Is it unusual for the J-hook to slip out of the slot?
A The J-hooks slip out of the slot occasionally.
Q Is that an acceptable result in a compliance test?

A The J-hooks can be taken out of the slot during the test while still maintaining the fuel tank in its proper place, and review of the film and review of

the electronic data would determine whether that result was or was not acceptable.
Q Did you review that film in this case for this test?
A I have no specific memory of reviewing that film, but that is how I trained engineers and how I was probably trained when I came on board.
Q Okay. Do you know if you actually reviewed the two crash tests that we've been talking about before you certified compliance, or did you rely upon the fact that your predecessor had found those tests to be acceptable?
A I would have looked at every film in the compliance documents and relied on the fact that my predecessor had found them acceptable.
Q Now --
A In the review, you would be looking for things along the lines that would stand out to you that might not have been there.
Q Is it correct, sir, that after you certified compliance of the 1996 Jeep Grand Cherokee in July of 1995, that you initiated or suggested that additional work needed to be done to modify the vehicle to improve its performance on the rear

impact test?

A When we did the '96 Grand Cherokee, they were trying

to introduce a new design for the fuel tank. The subsequent work in '97 was to try to get that fuel tank to pass the compliance tests and the DaimlerChrysler guidelines.

Q The work that was initiated to obtain compliance for the '97 vehicle was beyond changing the fuel tank, correct?

A There is a suite of changes that came along with that fuel tank change.

Q What changes that affected performance?

A Performance in what?

Q On the 301 tests.

A The exact changes, I wouldn't be able to detail them. In a general way, I knew that they included a new kind of tank and a new kind of vent line and a new kind of fuel pump.

Q Any other changes that you believe were implemented for the '97 model to improve the performance of the vehicle on the 301 impact tests, rear impact tests?

A In the rear impact tests, to get the second vehicle to pass, we added a bracket which was originally part of the trailer hitch onto the '97 Grand Cherokee structures.

24 Q What did that have to do with the change of the fuel
25 tank?

1 A The way the fuel tank is manufactured is different,
2 and the way the fill and vent lines are attached to
3 the tank is different, and the way that those fill
4 and vent lines stayed attached to the tank performed
5 differently from the '96 to the '97 model year.
6 Q What does that have to do with the -- a bracket in
7 the frame rail?
8 A The bracket in the frame rail prevented crush, as we
9 spoke before. It translated the crush to a
10 different part of the car and prevented crush at the
11 attachment of the fill and vent lines to the tank so
12 that they would stay attached.
13 Q Where were the fill and vent lines for the tank,
14 what side of the tank?
15 A Left side.
16 Q Isn't it true that with respect to the 1997 vehicle
17 model Jeep Grand Cherokee, that the reason for the
18 track -- I'm sorry, the reason for the frame rail
19 reinforcement was because of excessive crush that
20 you got on a crash test in 1995?
21 A The crush is the same from vehicle to vehicle. What
22 we saw was the performance of the attachment to the
23 fuel line and vent to the tank. That's where the
24 difference was.

25 Q You don't have a recollection of having an anomaly,

1 a test involving a 1996 Jeep Grand Cherokee where
2 you had crush in the frame rail that was more
3 excessive than you had experienced in earlier tests?
4 A No, I don't have any recollection of a change in
5 crush from car to car. There was a change in
6 performance with new parts on it that we were trying
7 to put into the '96 vehicles, but I don't recall
8 anything in crush from vehicle to vehicle being
9 different.
10 Q You don't have a recollection of a test where there
11 was what was described as excessive crush after you
12 certified compliance of the '96 model year vehicle?
13 A No, I don't.
14 Q I'm going to hand you what I'm marking as Exhibit 5,
15 which is a March 2, 1995 memo, and Exhibit 6, a
16 Safety Test, Vehicle Crash Test Request. Have you
17 had an opportunity to read both of those documents?
18 A Yes, I have glanced over them.
19 Q Okay. Does this refresh your recollection that
20 there was a test of a 1996 production vehicle that
21 had a crush pattern that was quite different from
22 prior vehicles?
23 A Different, I remember that they would -- there was a
24 change in the way it crushed, but it wasn't

excessive.

Q There was excessive fuel leakage in the test that exhibited the different crush, correct?
A Yes.
Q And where was the leakage from in that tests ZJ8602?
A Do you have the Proving Grounds Test Summary for ZJ8602?
Q No, sir. I've asked for it and it's not been produced. All I have is the Vehicle Crash Test Request which you can see does not contain any of the information concerning the results of the test, and that's what's been marked as Exhibit 6.

MS. FOGEL: I don't believe that's a rear impact crash test, that number.

MS. SPAGNOLI: Well, counsel, are you testifying?

MS. FOGEL: You said that you asked for it --

MS. SPAGNOLI: Right.

MS. FOGEL: -- and I'm just telling you that I don't think that that was part of the request. I'll go back and take a look and see.

MS. SPAGNOLI: Well, the Crash Test Request says 30 mile per hour rear barrier. I've repeatedly asked. I've been provided with a request that doesn't contain the results of the test. It's been

repeatedly asked for. I've been told I've been given everything.

Q (BY MS. SPAGNOLI): So, Mr. Estes, do you know where the leak occurred in crash test 8602?

A I don't recall.

Q Do you know what the crush was that was different in this 1996 production Jeep Grand Cherokee?

A As I recall, the kick ups were almost vertical after the test, which is what I'm trying to remember for this particular test.

Q If you look at Exhibit 6, Build Condition, the test 8602 was not a test where you were testing the different fuel tank; is that right?

A The 1996 co-extruded fuel tank is the description of the new tank, and I think that ZJ8602 was the new tank.

Q Okay. The crush that you're referring to in the kick-up area had nothing to do with the different tank, did it?

A No.

Q Did it?

A The crush in the kick-up area did not have anything to do with the specific tank that was in the vehicle.

Q So I'm correct?

A Is that what you said, that the tank did not cause the crush in the kick-up area?
Q Right, yes. Am I correct?
A The tank did not cause the difference in the crush at the kick-up area.
Q Okay. So what was going on in this case was a result in the structural components of the vehicle surrounding the tank that led to excessive fuel leakage so that the vehicle in the test did not comply with the standard, correct?
A You can't make that leap of faith that the reason for the leakage was due to the performance of the structure until I can see or remember what it was that caused that leakage. The fact that it performed differently, all the vehicles perform within some variation. They have a pattern and sometimes it's a little bit more this way, a little bit that way. To say that the change in that pattern led directly to that leakage, you can't say.
Q Well, we know two things about the test from what we've been given. One is that there was leakage in excess of the standard, correct?
A Uh-huh.
Q And the second is that there was a crush pattern that was quite different from prior vehicles,

correct?
A That's the way I described it then, yes.
Q Okay. And beyond what we see here, you cannot tell us what it was that caused the different crush pattern in the test vehicle ZJ8602, correct?
A I don't remember any causal for that, at the time. Right now I don't remember what the exact cause was. I have a remembrance that one of our tests -- and I believe it was this one -- had a change in the way the pattern was at the kick-ups between the floor and the rear deck. I think that's what I wrote at the time.
Q And do you think that that resulting crush pattern allowed greater crush, thereby necessitating structural reinforcements in the subsequent model vehicle?
A The car that I'm recalling which -- and as I sit here and think about it, I'm having a little bit of difficulty making sure it was exactly this vehicle. The crush that happened didn't happen around the tank. The tank would have been less crushed if this was the kick-up area geometry that I'm recalling. It moved the vehicle farther up, the rear deck of the vehicle up further and the performance of the rear rails left them perpendicular to the bottom of

the car whereas they're typically not quite that perpendicular. They're actually not that way at all. They're, in fact, crushed rearward back where the tank was, and the one that I remember, which I think is this vehicle, left the rear rails vertical afterwards.

Q And can you answer my question whether that crush pattern necessitated a structural reinforcement in the subsequent model vehicle?

A No, that crush pattern is not what we were attempting to modify with the reinforcement bracket there.

Q Well, what were you attempting to modify with the reinforcement bracket?

A The reinforcement bracket on the '97 ZJ was added to prevent the closure of a hole in the rear rail where the fill and vent lines pass through it. It was a pass-through hole.

Q So you wanted that hole to stay open so that the vent line and the fuel fill line would not be severed in a crash?

A We did not ever see them being severed, but they would have contact from the rail as it would close and deform around it. We wanted to prevent the contact of the frame rail with the fill and vent

lines, and the only way we came up with to do that was to add this reinforcing angle bracket.

Q And why did you have the fuel line and the vent line routed through the frame rail?

A That's a decision that I didn't make, and -- as a vehicle development test engineer. That was done by the architecture and body-in-white guys to where the fill and vent line would go.

Q Do you have an explanation for why they chose to route those lines through the frame rail?

A I choose not to speculate on their reasons. I don't know exactly why they did. I would only give you my own personal opinion for what might have been their reason, but what their exact reasons were, I couldn't say.

Q Are there any other Chrysler vehicles that you're familiar with that routed a fuel fill line and a vent line through a frame rail, a hole in a frame rail?

A None that I'm familiar with, but I don't know the details of all our vehicles.

MS. SPAGNOLI: Let's take a short break, if that's okay with everyone.

VIDEO TECHNICIAN: Going off the record at 3:31 p.m.

(Off the record.)
VIDEO TECHNICIAN: We're back on the record at 3:37 p.m.
MS. SPAGNOLI: I just want to request that we be -- that I be provided copies of the documents that you showed the witness yesterday.
MS. FOGEL: Okay. For purposes of the record, everything that was showed to the witness yesterday were already provided to counsel, but I'll identify it for the record, and those were the -- those were the Safety Test, Vehicle Crash Test Requests for the vehicles for '96 and '97.
MS. SPAGNOLI: Can you give me the test numbers?
MS. FOGEL: Yes, I can, 5339, 5380, 40 -- 5441, all the way to the end.
MS. SPAGNOLI: Can you just read the numbers for me?
MS. FOGEL: 5493, 5890, 5493. Did I say that one already?
MS. SPAGNOLI: Uh-huh.
MS. FOGEL: 5681, 5789, 5890, 5927, 5967.
MS. SPAGNOLI: And were you -- were these just the test requests or the safety -- the crash test letters.

MS. FOGEL: They were the Vehicle Crash Test Letter and the Vehicle Crash Test Request.
MS. SPAGNOLI: Okay.
MS. FOGEL: And the only other thing that was showed to the witness was the memo from March of '95, I believe, that you showed to him already and has been marked as an exhibit.
THE WITNESS: And the compliance documents.
MS. FOGEL: Oh, yes, and the compliance documents for '96, '97 but not the full set that you marked today. It was just the first couple pages.
MS. SPAGNOLI: Okay. The letters, what we were just talking about, Exhibit 5?
MS. FOGEL: I don't have a copy of the exhibits.
MS. SPAGNOLI: I'm sorry.
MS. FOGEL: That's correct.

Q (BY MS. SPAGNOLI): Mr. Estes, can I just confirm that in terms of the material that you reviewed, other than this letter which references a rear impact test, ZJ8602, you have not seen the Crash Test Letter for that report in your preparation for your deposition; is that right?

A Which report?

Q 8602. That was not on the list of what was just

read, correct?
A The Crash Test Letter and Crash Test Report is on the list that was just read.
Q 8602 was on the list?
A The vehicle number, ZJ8602, is on the list.
Q The Crash Test Letter for 8602?
MS. FOGEL: Can we go off the record for a minute?
MS. SPAGNOLI: No.
MS. FOGEL: I don't want to testify. You can ask the witness.
MS. SPAGNOLI: Well, you just read me a list of what you showed him.
MS. FOGEL: That's correct.
MS. SPAGNOLI: And that did not contain that document.
MS. FOGEL: It did not contain that vehicle test number, correct.
MS. SPAGNOLI: So the witness is telling me he saw a test letter for VC8602, and I need to know why there's a discrepancy in what you showed him and what he's saying he saw.
MS. FOGEL: Fine. Ask the witness to explain.
Q (BY MS. SPAGNOLI): Where did you see it?

A The document that you gave me references ZJ8602 and cross references to a vehicle crash test No. 5380. 5380 is on the list that you were just read. And I reviewed vehicle crash test 5380 yesterday.

MS. FOGEL: I tried to tell you that before but you accused me of testifying.

MS. SPAGNOLI: Well, you were testifying.

THE WITNESS: That's what those first two columns do. There's vehicle build numbers and there's vehicle crash numbers, and it associates the vehicle build number, which when you're in the engineering community, you talk about which vehicle build number it is and then when it becomes a test, it gets a vehicle crash number.

Q (BY MS. SPAGNOLI): Okay.

A And the vehicle build number is referenced in that letter as ZJ8602, and that goes to the Vehicle Crash Test Letter VC5380.

Q Okay. Was there a crush measurement taken for 5380?

A I don't remember. Why don't I look through the document and see if it has it here. It's not there. It's not here. I don't have it in the documents in front of me.

Q I'm going to mark as Exhibit 7 crash test VC5380.

A Thank you. There was a dynamic crush analysis

performed on 53 --
Q Tell me what page you're looking at.
A This page, ma'am.
Q Okay. Signed by Mr. Roberson (sic) and Mr. Carlisle?
A Anderson.
Q I'm sorry. Carlisle is the second name?
A Yes, ma'am.
Q Anderson is the first name. And what was the dynamic crush in this test that was measured?
A In the test 5380?
Q Right.
A It shows dynamic crush of 22.3 inches.
Q Okay. Where is there a description of the kick-up crush that you were describing?
A It's not written down, and that would have been only in what I was remembering.
Q So the test report itself does not contain any description of the crush in the kick-up area of the frame rails that you've described; is that right?
A Let's see here. In the very last page, there is a photograph, and in that photograph you can see the vertical rail section that I was describing. It's a terrible little photograph, mind you, but this section here is the rail that I was trying describe.

They should be at an angle which is something like 30 degrees as they come up in the pre-test state, and here they are vertical. There were photographs taken of that specific area, and attached here to this document.

Q Okay. And as you sit here today, you have no explanation for why the unusual configuration after the crash test occurred in that area?

A Well, this is what I wanted to see because I wasn't certain when you had asked me before without this photograph to remind me. It looks to me like there were cold welds, and it's hard to tell from this photograph, but those black spots are classic that the car either -- right there, those welds pulled through, or there were welds around it that were missing. You can't tell from this photograph that sometimes the vehicles have welds that are broken in this area, and they're not supposed to break, but when they do, the vehicle performs like this, and as you can see, the gas tank rises up over the suspension and translates more forward, and that's what you get as a result of it. It's actually in geometry sometimes a favorable thing, but it is different than what it is designed to do.

Q Are you saying it's favorable if you have weld

failures?
A In this case, under the performance of the vehicle in this regard, those weld failures allow it to be less crushed. Now, it's not entirely clear when you look at this other page of photographs, but you can see that the crush has translated for rear impact into the area there by the wheel well, whereas the section around the rear window is typically where the crush occurs, so it's in a different spot. It's moved.
MS. SPAGNOLI: Not responsive.
Q (BY MS. SPAGNOLI): Are you saying it is a favorable result to have weld failures in a crash test?
A In this crash test, the particular welds in that area perform favorably to the 301 requirement of leak test.
Q So you're saying Chrysler wants the welds to fail in that area?
MS. FOGEL: Objection to form.
THE WITNESS: No. The welds are necessary for many other functions in the vehicle. When it performed like this, it was the first time that I had seen it, and that's why I made note of it in the letter, and the first time and the last time that it had occurred, these welds are necessary to the

performance of the vehicle. In the performance of the vehicle in a crash test, they allow a different kind of geometry to be created, which you can interpret as being favorable.

Q Did you -- you just said you noted the weld failures in the letter. Where did you do that, sir?

A The photographs that are attached to this letter that you gave me.

Q No, sir. Where in the test did you note in the letter weld failures in the frame rail?

A You can see in the photograph these spots, and that's where I'm seeing it. To have written a description of them, I did not write that into the letter.

Q Okay. You just said you noted it in the letter, so that was not an accurate statement; am I right?

MS. FOGEL: Objection to form.

THE WITNESS: The document that you handed me is labeled the Test Letter, and that's where I see them here.

Q (BY MS. SPAGNOLI): Okay. Let me reread your testimony in response to my prior question. You said, "When it performed like this, it was the first time that I had seen it and that's why I made note of it in the letter." You did not make note of the

weld failures in the letter --

A No.

Q -- true?

A I made note of the -- what exactly did we say? The crush pattern was quite different from previous vehicles, and that is the note that I made.

Q And that's not in the letter, correct?

A The Vehicle Crash Test Letter, it's not in that letter.

Q Okay. There's no mention of weld failures in the Vehicle Crash Test Letter, is there?

A I don't believe there is.

Q Okay. And you're saying that in this test you believe the weld failures that you can tell from the black and white photocopy of the photograph, in fact, enhanced the performance of the 1996 Jeep Grand Cherokee on the 301 rear impact test; is that right?

MS. FOGEL: Objection to the form.

THE WITNESS: There are what appear to me to be a separation, and these are -- should be welded, and when that occurred, this shape lifted the gas tank higher than it was in a normal impact test.

Q (BY MS. SPAGNOLI): And your testimony is that that

MS. FOGEL: Objection to the form. You can answer.

THE WITNESS: The result of the tank's movement, it -- I want to say it very clearly. Bringing the tank up and away from the other suspension components does not force it into contact with the axle and the track bar that we had talked about earlier. Lifting the tank has a positive effect of removing it from other objects it may have contacted. That should help the tank perform in an impact test better.

Q (BY MS. SPAGNOLI): Better in the sense that the tank is less likely to come in contact with something that could cause a leak?

A Yes. If you are able to have any part of the fuel system to not be in contact after the crash test, that is a -- the direction of the philosophy of Chrysler in testing it.

COURT REPORTER: Of Chrysler --

THE WITNESS: Of Chrysler in testing fuel systems.

Q (BY MS. SPAGNOLI): We do not want to have contact, as much as possible, and by removing the tank and moving it to a different position, you minimize the

will technically describe as having been better. You minimize the contact, it's better for the tank.

Q And in terms of the Grand Cherokees that you tested and observed having been tested in rear impacts, this was the only test where you got that better result from having the tank move up and away from the suspension components, correct?

A The -- this is the only one that I recall that did that. The movement of the tank relative to the vehicle is a design of the kick-up. It's supposed to lift and move the tank. The separation of the rails is what is a different pattern here. The shape of the rails and the forces that are applied to the rails are designed to bend the kick-up over the rear axle and lift and separate the tank from the axle. That's its design intent.

When it did it in this particular test, the rails separated, and when they do that, they don't have the same strength, and there was a bend that caused the rails to be vertical post test, and that's what makes it different in this regard.

Q Right. And so my question was, that in this case, you got that more favorable result because the welds that ordinarily should have remained intact did not,

correct?

A Yes. I think that's my cause and effect analysis

from looking at these photographs and my memory.
Q Okay. And so in production vehicles, you would not expect the welds to fail, and, in fact, they were not designed to fail, correct?
A Yes, they were not designed to fail. They should not have failed, and in production vehicles, that shape of the rail post test, it should have a different shape.
Q Okay. And that different shape in all of the other Grand Cherokee tests that you reviewed or saw, after the crash, the tank was in closer proximity to the suspension components than in the test where the welds failed, correct?
A The weld failure allowed a different kind of geometry. To say they were closer, I don't think, is an accurate statement, because it's almost always in contact, and I don't have any recollection of any one that's not in contact with the axle or the track bar, but it's the degree of contact and the area of the axle and the track bar, how much of the axle and track bar that are in contact that changes from test to test.
Q Okay. You've just told us that, am I correct, with

the Grand Cherokee vehicles between 1994 and 1997 model years, that you observed either being tested

or you reviewed the crash test reports? Are you telling us that in all of those cases similar to the notes that we saw on the two tests where the vehicle was certified in compliance for the '90 -- based on the '91 and '92 tests, that there was contact between the fuel tank and the rear axle and track bar? Because that may have been a really long question and I'll start it over unless you got it.

A In all of the tests that I observed, when you have a rear impact event, the fuel tank contacts the rear axle, and for the most part, contacts the track bar in that it is attached to the axle and goes over the axle. I can't say specifically whether every one of them contacted the track bar, but I would -- I have no memory of any one of them not contacting the axle. I believe every one of them contacts the axle --

Q And is that --

A -- but whether or not they actually touch the track bar on every single test, I'm not certain that's true.

Q Okay. Is it true for the '97 model year, that had the addition of the reinforcement bracket to the

left frame rail, that in the crash test you observed for that model year vehicle, the tank also contacted the axle?

A In the '97 rear Grand -- rear tests on the '97 Grand Cherokee, the vehicle contacts the rear axle. The reinforcing bracket actually translates the crush into this kick-up area and causes exactly the same phenomenon to occur to a degree that we were looking at in VC5380.
Q Okay, wait. I think you may have misspoken. Let me just be sure. I think you said the vehicle contacts the rear axle. I think you meant to say the tank.
A The gas tank, the -- in the crash tests, the gas tank will contact the rear axle. When we added the reinforcing bracket, we moved the crush from the rear rail forward in the vehicle to the kick-up areas to more closely mimic lifting and separating the tank from the axle area that takes the crush from the rear deck and it moves it forward into the kick-up areas. When you do that, it more looks like the test 5380 that was a development test.
Q Now, earlier you told us that you added the frame rail to keep the hole in the rail from closing up?
A Uh-huh.
Q And compromising the fuel vent and fill lines,

correct?
A Yes.
Q Are you now telling us that an additional design --

A Well, it's a benefit.
Q -- goal, benefit, that you actually contemplated and searched for and attempted to accomplish with this bracket was to change the crush characteristics so that the tank would not contact the axle in the same manner as the prior vehicle designs had done in the crash tests?
A When we were looking at solutions to prevent the pass-through hole for the fill and vent line from collapsing, there were a variety of things that you could do. When we judged the quality of each solution, one of them was to prevent the hole from collapsing and another one is to enhance the performance of the tank and the system in the crash test. I don't remember predicting before the test that that would occur. I do remember noting it after the test and saying that it was a good thing and an added benefit for the design change of adding the bracket.
Q Okay. How did that enhance the performance of the tank?
A What it does for enhancing the performance of the

area of the axle which is the track bar itself and away from the track bar bracket, and away from the shock mounts and on to simply the differential, top of the axle, and the nice round rod that is the track bar because it goes above the axle now instead of staying below, and at the level of the axle in the previous crush where it happened in the rear rails and didn't have the kick-up event that now occurs when you put the reinforcing bracket on it, but to say I predicted that, I don't think I would go there.

Q Well, when you say that the change in adding the reinforcement bracket enhanced the performance of the tank because it removed a number of things that it came in contact with, what were the things that you believe the tank no longer came in contact with after you added the reinforcement bracket?

A The differential is essentially a pumpkin. In fact, it has a nickname of that. When you hit a ball above its centerline, it tends to slide over it. When the gas tank hits the differential on the

lower, and that is how I think we enhanced the performance of the tank in the test.

VIDEO TECHNICIAN: Just a few minutes left on the tapes.

THE WITNESS: Are we stopping?

MS. SPAGNOLI: Less than five?

VIDEO TECHNICIAN: Less than five.

MS. SPAGNOLI: Okay. We need to go off the record.

VIDEO TECHNICIAN: Going off the record at 4:01 p.m.

(Off the record.)

(Deposition adjourned at or about 4:01 p.m.)

S T I P U L A T I O N S

IT IS HEREBY STIPULATED AND AGREED by and between the attorneys for the respective parties hereto that all rights provided by the C.P.L.R,

including the right to object to any question, except as to the form, or to move to strike any testimony at this examination, are reserved; and, in addition, the failure to object to any question or to move to strike testimony at this examination shall not be a bar or waiver to make such motion at, and is reserved for, the trial of this action.

IT IS FURTHER STIPULATED AND AGREED that this examination may be sworn to, by the witness being examined, before a Notary Public other than the Notary Public before whom this examination was begun, but the failure to do so, or to return the original of this examination to counsel, shall not be deemed a waiver of the rights provided by Rule 3116, C.P.L.R, and shall be controlled thereby.

IT IS FURTHER STIPULATED AND AGREED by and between the attorneys for the respective parties hereto that a copy of this Examination Before Trial shall be furnished without charge to the attorneys representing the witness testifying herein.

FURTHER DEPONENT SAYETH NOT:

_____

JUDSON B. ESTES

Subscribed and sworn to before me
this _____day of _____, 20___.
_____
Notary Public, _____ County

My Commission expires: _____.

STATE OF MICHIGAN)
) ss
COUNTY OF MACOMB)

I, Melinda S. Moore, (CSR-2258), a Notary Public commissioned and qualified in and for the State of Michigan, do hereby certify there came before me on the date and at the location

hereinbefore mentioned, the following named person, to-wit: JUDSON B. ESTES, who was by me sworn to testify truthfully concerning the matters in controversy in this cause; that he was examined upon his oath and his examination was reduced to typewritten form under my supervision; that the deposition is a true record of the testimony given by the witness.

I further certify that I am neither attorney or counsel for, nor related to or employed by any of the parties hereto or financially interested in the action.

IN WITNESS WHEREOF, I have hereunto set my hand and affixed my Notarial Seal this 20th day of June, 2005.

Melinda S. Moore, Notary Public
Macomb County, Michigan
My commission expires: 9-6-2010

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ATTACHMENT ESTES 20050527

VOL II

SUPREME COURT OF THE STATE OF NEW YORK
COUNTY OF NEW YORK

NATASHA AUSTIN AND NICOLE AUSTIN,

Plaintiffs,

-against- Index No. 10215/00
Volume II

DAIMLERCHRYSLER CORPORATION, WESBURY JEEP EAGLE, INC., MARIBEL ORTIZ, AS INTENDED ADMINISTRATRIX OF THE ESTATE OF JOSE A. SIERRA, DECEASED, GRACE H. EVANS AND LISA N. EVANS,

Defendants.
_____/

The continuation of the videotaped deposition of JUDSON B. ESTES, a witness in the above-entitled matter, taken before Melinda S. Moore, (CSR-2258), a Notary Public, at 840 West Long Lake, Suite 200, Troy, Michigan, on May 27, 2005, commencing at or about 8:38 a.m.

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Troy, Michigan
May 27, 2005
* * * * *

VIDEO TECHNICIAN: Today's date is May 27th, 2005, and we're back on the record at 8:38 a.m. This is the continued video deposition of Mr. Judson Estes.

MS. FOGEL: This is Maureen Fogel from Herzfeld & Rubin for DaimlerChrysler Corporation. I would just like to renew the objection that was put on the record yesterday during the beginning of Steve Lazarus' deposition. We are objecting to the videotaping of the deposition as being not in accordance with the New York Code Rules and Regulations 202.15 with regard to the notice provisions that are stated therein, and yesterday also we had cited to a particular case.

We have agreed today to continue with the videotaped depositions since we're all here from New York and California, and that we will visit the issue of whether the videotape portion of the deposition can be utilized with the court on another day.

* * * * *

J U D S O N B. E S T E S

after having been previously duly sworn by the Notary Public, was examined and testified on his oath as follows:

EXAMINATION

BY MS. SPAGNOLI:

Q Good morning, Mr. Estes.

A Morning.

Q Have you reviewed anything since leaving here yesterday?

A No, I have not.

Q Have you had any conversations with anyone about your testimony?

A No.

Q When you left yesterday, I noticed that you were talking with the attorneys in the parking lot. Were you discussing your testimony?

A No, I don't think we were.

Q Did you have any discussion at all about what your testimony might cover today?

A No. I think we were talking about real estate.

Q Okay. So you have not had any conversation with anyone since your testimony started about the questions that I've asked you or the testimony that you've given?

A I talked to my wife a little bit about it. Other

than that, I have not spoken to anyone.
Q Okay. Yesterday, when we broke, you were telling us that with respect to your -- well, let me withdraw.
We were talking about the reinforcement bracket that was added to the 1997 model Jeep Grand Cherokees as a result of the -- I think you said, as a result of two things. The first was you wanted to keep a hole in the left side rail from deforming and compromising the vent line and the fuel filler line, and, secondly, you said that the reinforcement bracket was installed in order to manage the crush so that the fuel tank would not contact the differential as it was in the earlier models. Am I correct?
MS. FOGEL: Objection to the form. You can answer.
THE WITNESS: The way you stated it is not correct. The bracket was installed on the left rear rail to prevent contact with the hole as it closed, not to deform it. The bracket also had the effect of lifting the tank up on top of the differential but it still contacted it.
Q (BY MS. SPAGNOLI): Right. You wanted to change the way the tank contacted the differential from the earlier model?

answer.

THE WITNESS: The true intent of the bracket was to prevent contact with the fill and vent lines on the body frame rail where they went through.

Q (BY MS. SPAGNOLI): Are you now changing your testimony?

A No, no. That's what we intended to do. It did lift the tank above it.

Q And that was a change from the prior models?

A Yes. Adding the bracket was a change from prior models.

Q In the prior models -- no, the change from the prior model was that the manner in which the fuel tank contacted the differential was different?

MS. FOGEL: Objection to form. You can answer.

THE WITNESS: Where the tank hits the differential is raised by introducing the side bracket on the left side. That bracket helps the tank rise over the differential. It still contacts the differential, and the contact with the differential is still in the same place on the tank.

Q (BY MS. SPAGNOLI): So the means by which the

contact is that it's not as a direct impact; it's an impact that purportedly allows the tank to not have a blunt force impact with the differential?

MS. FOGEL: Objection to form. You can answer.

THE WITNESS: It allows the tank to slide over the top of the differential.

Q (BY MS. SPAGNOLI): Instead of blunt force?

A It's a round differential and you can't really hit it square.

Q Well, it was hitting it square before, wasn't it?

MS. FOGEL: Objection to form. You can answer.

THE WITNESS: It's hard to hit a round thing square. You almost always glance off of it at some level, and the idea is to make it hit it more on the top of the differential. That was a benefit of using the bracket.

Q (BY MS. SPAGNOLI): Are you saying that the fuel tanks in the '93 to '96 model Jeep Grand Cherokees did not basically wrap around the differential in the rear impact --

A Not in every case.

Q -- as opposed to sliding off?

A I don't recall.
Q Well, then, how can you say not in every case?
A Pardon me for a minute. The fuel tank does not wrap around completely the differential. It hits it and some of them hit and slide over it; some of them hit and slide off to the side. The way the tank contacts the differential is test to test independent and changes every one. To say it does one thing or another in every test would be very difficult to say.
Q Well, then, how can you say that the addition of the reinforcement bracket was going to change the manner in which the tank slid off the differential?
A Well, no, it has helped the differential, and I tried to be clear, that it has helped the fuel tank move in that direction, that it adds a propensity to move the fuel tank in that direction, that we talked a lot yesterday about what I meant by help and aided, and it increases the probability that the tank will slide over the top of the differential. This is what I'm trying to say, is that it's an aid for the tank. It does not make it do that 100 percent of the time.

every one. How many tests did you do with the reinforcement bracket that allowed you to conclude that the reinforcement bracket would change the manner in which the fuel tank would hit the differential?

MS. FOGEL: Objection to form. You can answer.

THE WITNESS: I don't remember how many exactly. In the most recent review of the data, that's where we would have to read the test descriptions to get a precise number. It was four or five, I think, but I can't remember precisely.

Q (BY MS. SPAGNOLI): You think you did four or five tests that had the bracket?

A I think so.

Q And would those tests note the manner in which the fuel tank hit the differential?

A That would be up to the guy at the proving grounds, whether he wrote it down into the data on the Fuel Impact Summary Sheet.

Q By 1995 or '96 did you expect that the engineers running the impact tests on the Jeep Grand Cherokees would make a note of contact between the fuel tank

and the differential?

A Did I expect them to make a note?

Q Right.

A No, I guess I didn't.
Q Okay. So that's not something that was an issue that needed to be noted in the report to bring to the attention of the development engineers?
A No. I don't think that contact between the fuel tank and the axle needed to be noted every time.
Q Okay. When did it need to be noted?
A The experience of the test engineers as they look at the crash test after the event would tell them if something unusual had happened, and when something unusual or distinct had happened, then that's noted. That's what would be noted. That's a guideline for the notations in the impact test logs.
Q We saw in the original tests that were used to certify the Jeep Grand Cherokee as in compliance with the federal standard that the test engineers had, in fact, noted contact between the fuel tank and various components including the axle. Do you recall that?
A Yep.
Q And so at least in '90, '91, '92, when those tests were run, that was an unusual or unexpected

occurrence; is that what you're telling us?
MS. FOGEL: Objection to form. You can answer.

THE WITNESS: The first question was when did they have to do it. The fact that they did do it didn't mean that they had to make the notation. You could note a lot of different things on there but what you were expected to do is to note the unusual things.

It varies by each test engineer what they make notes of, and it varies where the vehicle is in its development cycle as to whether it's unusual or as it progresses through the cycling, and you see it again and again. You go, oh, that's the same thing, I don't have to note it, it occurs naturally in the progress of the test.

Q (BY MS. SPAGNOLI): So when was it decided with respect to the Jeep Grand Cherokee that the contact between the fuel tank and the axle and differential was no longer something to be noted in the crash tests?

MS. FOGEL: Objection to form. You can answer.

THE WITNESS: It would imply that there was an actual conscious decision to do that, and I don't

going to write this down today? No, that's not the way those things occur in engineering.

Q (BY MS. SPAGNOLI): And even though the contact with the tank and the differential became an expected occurrence in the 301 rear impact tests, you still, when you became the manager of the Jeep Grand Cherokee test program, decided to try and do something about it to change that impact and contact, correct?

MS. FOGEL: Objection to the form.

THE WITNESS: When the changes in 1996 were proposed for the vehicle, that is when we needed to alter the structure of the vehicle to make the new system pass.

MS. SPAGNOLI: Move to strike as nonresponsive.

Q (BY MS. SPAGNOLI): Can you answer my question, please?

MS. FOGEL: Have the question read back, please.

Q (BY MS. SPAGNOLI): And even though the contact with

the tank and differential became an expected occurrence in the 301 rear impact tests, when you became manager of the Jeep Grand Cherokee test program, you decided to try and do something about

it to change the nature of that impact, correct?
MS. FOGEL: Objection to form.
THE WITNESS: I did not decide to change the nature of the impact because I was the new manager.
MS. SPAGNOLI: We need to go off the record for a minute.
VIDEO TECHNICIAN: Going off the record at 8:51 a.m.
(Off the record.)
VIDEO TECHNICIAN: We're back on the record at 8:53 a.m.
Q (BY MS. SPAGNOLI): What were the changes in 1996 that you had to make in the structure of the Grand Cherokee to make the new fuel system pass?
MS. FOGEL: Objection to the form. You can answer.
THE WITNESS: I think that we didn't get around to actually fixing it until 1997 by adding the bracket. Is that the answer that you were looking for? Repeat that question.

Q (BY MS. SPAGNOLI): Well, I'm following up on your statement. You testified that when the changes in 1996 were proposed for the vehicle, that is when you needed to alter the structure of the vehicle to make the new system pass. What changes to the structure

of the vehicle were necessary to make the new system pass?

MS. FOGEL: Objection to the form.

THE WITNESS: The proposed system in 1996 needed to have the pass-through hole reinforced, and those were the changes we put in. We did not get the changes in till 1996.

Q (BY MS. SPAGNOLI): When you say the pass-through hole needed to be reinforced, was there a pass-through hole in the left side frame rail in the '93 to '96 model Jeep Grand Cherokees?

A As I recall, there was.

Q And so what was the reinforcement of the hole -- let me withdraw.

Why was there a change necessary to reinforce the hole for the left side frame rail because of the change in the fuel system?

A The new fuel system's vent and fill lines were contacted by the hole when the vehicle was in the rear impact test.

Q Are you saying that had not occurred in the prior tests?

A I had not seen it occur in the prior tests.

Q Had it been noted in the prior tests?

A It had not been noted as far as I remember in the

prior tests.

Q And is that something that should have been noted if it had occurred in the prior tests?

A The men who observed each test would know what the pattern of crush and contact was. If it was unusual and different and something that they hadn't expected, they probably would have noted it. I did not remember seeing those notes and so I do not think that it occurred. I do not actually see the tests. When you see the films and read the reports, to see that very subtle contact between the fill and vent lines and that hole is difficult, so I did not see it directly and I don't know if it was there.

Q Well, when you saw it yourself, you thought it was something you needed to fix, right?

A There was the test that we had spoke about earlier, 5380, and in that test with the new fuel system, it had a change in the way it behaved, and I wanted to --

COURT REPORTER: Excuse me, in the way it

--

THE WITNESS: Behaved in the contact, and I wanted to fix that as a result of that test.

Q (BY MS. SPAGNOLI): Okay. When you say there was a change in the way it behaved --

A The body structure and fuel system, the entire test

result.
Q Because of the failed welds?
A I'm not sure whether they were failed welds or they pulled out. I'm not sure exactly what the issue is with those welds. I'm not a weld expert, but the metal there in that film, I remember, it was vertical. That was something new. It had separated. That was something new. And the fuel system had failed. And as a result of those tests where the fuel system failed, we were obligated to change the way the system performed in the test to improve it, and that's when I took on the task, as you can see through the testing, to improve the performance of the vehicle so that that would not occur again.
Q Now, in the 5380 test that you talked about, was the failure of the fuel system the fact that the vent line and the fuel fill line that went through the hole in the left side frame rail actually were

severed, causing a leak in excess of the standards?
A No, the lines themselves weren't severed, and I would like to refresh my memory for a minute.
Q Sure.
A Yeah, this is the test that I remember. I just wanted to make sure it was this one. The lines were

not severed. There was a plastic fitting on the tank that had been built as a prototype, as a short run. You know, they make five or ten of them, and that fitting didn't remain attached to the tank, and that's the note in the test letter, and the reason it didn't remain attached to the tank is that the lines and the line -- the fill and vent line hose were pulled and the fitting wasn't properly welded on. As I recall, that extra strength from the pulling and the poor prototype welding separated it, and that's a very large hole in the tank when that occurs.

The system can be fixed in a couple ways: One, an improved weld, and, two, to minimize the force that pulls on the fill and vent line, which is eventually what we got around to with the bracket.

Q Okay. So, first of all, the statement in the 5380 test report says -- and let me mark that. Have I already done that?

A I have it in front of me as Exhibit 7.

Q Okay. Exhibit 7, the 5380 test report states under Post Test Remarks, "There was excessive fuel leakage during impact and the subsequent 30 minutes, resulting from partial separation of the vent line fitting from the tank." Have I read that accurately?

A Yes, ma'am.
Q Now, are you telling us that the vent line fitting separation occurred because of the change in the frame rail's movement during the impact portion of the test? In other words, the frame rail where the vent line and fitting fuel line pass-through moved in such a way that you believe they helped separate the vent line from the tank?
A Moved and crushed, and, yes, I do believe that that was one of the contributing factors. Now, that's just my belief, and I think that that's the way it happened.
Q Okay. And you also mentioned that you think that in addition to the failed or problem welds in the frame rail that there was a weld issue with respect to where the vent line attached to the tank; is that right?
A There was on this tank an issue with the weld where

the fitting is attached to the tank.
Q Now, since this is a plastic tank, are there welds with respect to the seals on the tank for the vents? Where does the welding occur?
A The welding is a vibrasonic welding system and it's a large plastic plate and it has two male nipples on it, one large, one small, a fill and a vent, and

they vibrate this plastic onto the plastic of the tank with a stamp, and that vibrating welding is supposed to meld onto it. When the manufacturer of the tank produced this very short run, there was a quality control issue with that specific weld. When it broke and separated in this test, we noted that some of the weld was a little thinner where it separated, and it shouldn't have been that way. They went back to the manufacturer and I believe reworked the process. I was not involved in that part of it but we didn't see this issue again in our subsequent series of tests.

Q Okay. So let me ask you to confirm for me that in the crash test report for 5380 there is no reference to this quality control issue with respect to the weld on the tank. Am I right?

A No, no, because that's not visible post test. That comes about in the tear-down after the test.

Q And where in the test -- where in the -- well, let me withdraw.

Does that kind of a post-test tear-down observation get recorded somewhere?

A No, there's no formal way to do that at Chrysler. We don't have a written document that does that. You have the one letter that I wrote that was a meeting minutes that recorded my observations for

this particular vehicle.
Q Right. Can you tell me where in your observations then that were reported you noted that there were weld failures either in the tank attachment for the vent or the weld failures in the frame rails.
A What I have written here is, "The test vehicle exceeded the standard for fuel leakage [and] the vehicle crush pattern was observed to be quite different..." That's all I wrote as my notes on that rear impact test here in Exhibit 5.
Q So those observations you've been telling us are not recorded, at least in these minutes, correct?
A No. That's where they would have been recorded if I had written anything else.
Q Okay. Now, and you basically are telling us that the likelihood of observations after an impact test which raised some concerns and may need to be

addressed would not necessarily be found anywhere in the written files of Chrysler; is that right?
A The concerns that we had -- and typically that would get written down -- were things that we could not -- how do I want to say it? Easily assign cause. It's -- you look at it and you go, it was miswelded. If you look at it and you'd say I don't know what happened, and you make a note of it and try to

pursue, and the issue when the tank separated is clear to someone with engineering background, just a mechanical background to look at it and go, that's why it broke, so typically we would not make a note of that where you could assign it to what looks like a pretty obvious cause.

Q Well, you would agree with me that for people looking at what Chrysler and its engineers did in the design of the Jeep Grand Cherokee, that there may have been many things that went on in crash tests that were issues that had to be addressed but they were not put in the written record; is that true?

MS. FOGEL: Objection to the form. You can answer.

THE WITNESS: There are many things that engineers discuss and talk about and reveal and fix

in the development of a vehicle that are not documented.

Q (BY MS. SPAGNOLI): Okay. Do you agree with me that a consumer's expectations of safety from the fuel system in a Jeep Grand Cherokee should not depend upon whether or not the welds in the frame rails hold in a rear impact?

MS. FOGEL: Objection to the form. It's also asking the witness for legal conclusions when

you start talking about consumer expectations, but you can answer.

THE WITNESS: I expect to be safe in my car when I drive it, and I presume that my expectations are the same as many other consumers. I can only give you my feedback for how I feel when I'm in my car.

Q (BY MS. SPAGNOLI): Well, and as an engineer for Chrysler, would you agree that your objective was not to have a fuel system that was marginally in compliance with the standard but that might be out of compliance if there were weld failures?

A My objective as a test engineer at Chrysler was to provide a vehicle that exceeded the standard even in the face of variation like some occasional weld failures. I wanted it to exceed the standard. I

did a lot of work. I spent a lot of money. I did a lot of time to make sure that the vehicle, even though this condition occurred once, that if it occurred again, it would not cause the system to fail or even approach the standards.

Q Okay.

A That's my expectation for everyone else who does that job today, when I put my family in Chrysler cars, which we all drive Chrysler cars, that those

vehicles will perform above and beyond the standard.

Q Okay. And one of the ways you expect your vehicles to perform above and beyond the standard is to not have their fuel systems compromised if there are weld quality issues in the manufacture of the vehicle, correct?

A I expect that the variation in welding can be taken into account in the modeling and the testing and that it will still exceed the standard in a wide variety of conditions.

Q Okay. Now, with respect to the Jeep Grand Cherokee's -- vehicle's construction, do you have any reason to believe that there would be any significant difference between a 1996 Jeep Grand Cherokee and a 1997 Jeep Grand Cherokee?

MS. FOGEL: Objection to form. You can

answer.

THE WITNESS: The only vehicle structure difference in the rear of the car that I recall today is the addition of the bracket on the left rear side.

Q (BY MS. SPAGNOLI): Okay. Do you have any reason to believe that that bracket would affect the stiffness of the vehicle in a significant way?

A The stiffness of the vehicle -- I want to be clear about how we define the stiffness of the vehicle.

The stiffness of the vehicle in the impact tests is what you're asking me about, the stiffness of the vehicle in a turning maneuver, the stiffness of the vehicle in a trailing maneuver?

Q In the tests, in the impact tests.

A The stiffness of the vehicle in the impact test, when you add the bracket, it -- you know, I expected it to change it, but there's a way we could -- I mean, if you had the data traces and we looked at the peak g's, you could actually prove whether or not it had increased stiffness. I don't have that data in front of me, but I know my engineering judgement would tell me that, yeah, I expect it to be a little stiffer, but I don't know exactly how much or -- and we would -- I mean, that's a

definable problem but I don't have the data to tell you.

Q How would you define that?

A I'd look at the accelerometer traces. We put accelerometers on the car. We measure its g forces and you could look at those traces and tell the difference.

Q And what would be the effect of a stiffer rear end in a rear impact?

MS. FOGEL: Objection to form. You can

answer.

THE WITNESS: It would be kind of speculative for me. I think that the stiffer rear end, the way that bracket made it, allowed the vehicle to perform, I think, in an improved manner. The occupants themselves is what you're asking me?

Q (BY MS. SPAGNOLI): No, I'm not asking about the occupants. I'm asking about the performance of the vehicle in the rear impact as a result of a stiffer construction.

A When you say performance, are we talking about the performance to 301 guidelines for fuel leakage, that metric, the performance in acceleration, the performance as measured how? I'm struggling with that.

Q Well, let's start with compliance with the standard.

MS. FOGEL: Objection to form.

THE WITNESS: The compliance with the standard and the Chrysler guidelines in particular, the compliance to the standard is the same whether or not the bracket is there or not. I think that the bracket enhances the performance of the vehicle with the fuel system contact because of the way it changes the geometry in the test.

Q (BY MS. SPAGNOLI): Do you believe --

A I'm not sure I answered your question.

Q Okay. Well, that was a good start. Let me ask you this: With respect to compliance with the standard, you're saying you would expect the vehicle to be able to comply with the standard with or without the bracket, correct?
A The vehicle in 1996 should comply with or without the bracket. The vehicle in 1997, because of the change to the fuel system and the systems that were installed, it needed the bracket to comply.
Q Well, you've said that a couple times that the changes to the fuel system is what needed the bracket, but there was nothing about the frame rail that changed between the old fuel system for the '96 vehicle and the fuel system for the '97 vehicle,

correct? You had the lines passing through the frame rail in both cases, correct?
A The lines passed through the frame rail in both cases.
Q And what is it about the fuel system specifically that changed that required a change in the frame rail?
A The lines that pass through the frame rail were different between '96 and '97. The way they were attached to the tank was different, and the tank itself was different, and it was those lines and

their attachments that I wanted to use the bracket to protect.

Q Are you saying that the fuel tank attachments in the predecessor tank were less likely to pull apart because of contact with the frame rail where it passed through the hole than in the tank for the '97 vehicle?

A Well, they never did in any of the testing, and that's what I can say. I don't know whether they were more likely or not likely, but in the testing that was in place when I got there, they never did fail. When I ran tests with the new tank, I saw this failure and I went about to fix it.

Q Okay. So do you know that there was no separation

of a vent or fill line from a tank in a prior test that occurred on a model vehicle before you started doing testing on the Grand Cherokees?

A I was never told of it and I did not see it in the films.

Q Okay. Well, it could have happened and the engineers decided it was not an unusual or unexpected occurrence, it was something they could fix easily, and, therefore, they didn't need to note it in any reports, correct?

A If --

MS. FOGEL: Objection to the form.

THE WITNESS: If the separation caused leakage, it would have been noted. If the separation had caused any kind of failure -- I've got to believe that any separation would have caused a failure. That would have been noted. Because there weren't failures in the development of the tests that I saw and recall, I don't think that it occurred, but that all happened before my time when I was there.

Q (BY MS. SPAGNOLI): Well, if there was contact between the lines and the hole in the frame rail that did not cause an actual leak, it would not necessarily have been noted in the test, from what

you're telling us, that occurred before you became manager?

MS. FOGEL: Objection to the form.

THE WITNESS: I would say not necessarily, no, because that might be just the way it happens in the crash test.

Q (BY MS. SPAGNOLI): So --

A I don't know, but it might not be necessary.

Q Okay. So you can't say as you sit here today that there wasn't the potential for the same kind of failure in the '96 version of the vehicle as you saw in the proposed '97 fuel system in prior tests,

correct?

MS. FOGEL: Objection to the form.

THE WITNESS: Well, the potential for failure is always there. It's always there. That's why you run tests.

Q (BY MS. SPAGNOLI): And whether or not there was contact because of the pass through the frame rail, that -- let me withdraw.

Apparently your predecessors, if there was contact between the vent line, the fill line, and the hole in the frame rail but it didn't result in a leak, they justified that result in believing they didn't need to do anything to prevent a failure in

that area, correct?

MS. FOGEL: Objection to the form.

THE WITNESS: There's a guideline in one of the documents you showed me where it says contact with an unfriendly surface is something you have to withdraw and fix. The contact between the fill and vent line and this big round hole with rounded edges in it might not have drawn the attention of the crash test engineers at that time. I can see easily in my own mind that if this big round hose that's rubbery goes through this rounded hole, and it was held there after the crash test, it might not be a problem. You'd have to look at that specific car

and say what was the shapes and where were the edges at and is there any potential, and that's a judgement call to the engineers to look at that and go, well, you know, it looks okay to me. It's all round; everything there is round. You know, there aren't any sharp edges in that particular set of interfaces. You know --

COURT REPORTER: I'm sorry, there aren't any sharp edges --

THE WITNESS: Sharp edges, and that interface, you know, there's the hose, there's the frame rail, there's the pass-through. Everything on

there is rounded. It's a round hose. It's got a rim on the pass-through in the liner. I could easily see where even if it did pull a little bit on previous tests, they would go, well, you know, it's okay.

Q (BY MS. SPAGNOLI): Because you wouldn't consider that to be an unfriendly surface?

A It was not an unfriendly surface. It's all round stuff and it's a big round rubber hose and it's stretchy.

Q And if it was just contact, that wasn't something you needed to be concerned about?

A If it was just contact, it wouldn't have been noted.

It wouldn't have been unusual. It wouldn't have been something that you would write down.

Q So with respect to what ended up being the '97 model --

A Okay.

Q -- the only change structurally that you're aware of is the addition of this bracket as we've talked about, correct?

A Yes, ma'am, that's the only one I recall.

Q And would you expect the addition of the bracket to change the crush characteristics in a rear impact?

A I actually had hoped it would change the crush

characteristics.

Q In the sense that you would -- you've described where the tank would not strike the differential in the same manner as you had seen on the prior test?

A Yeah. The intent of the bracket was to prevent the pass-through hole from closing at all on the fill and vent lines, and after the test, we noted that it performed what to us was somewhat in an unanticipated way, that it lifted the tank up and over the axle. It was one of those things that went, well, it did what we thought we wanted it to do and we got this nice side benefit as well.

Q And was that -- as a result of that side benefit, did the vehicles that were tested after and with the

bracket added to it experiencing less crush than the vehicles that were tested without the bracket?

MS. FOGEL: Objection to form. You can answer.

THE WITNESS: I don't remember the exact crush numbers. I'd have to look them all up. I think we might be able to do that if we dug through all the stuff, but the exact crush numbers are measured on almost every test.

Q (BY MS. SPAGNOLI): Right.

A And could you dig all that up and see if it crushed

different or crushed less.

Q Did you expect that it would?

A No, I didn't expect to see that number change a lot. That number, it's -- I want to say a high level metric, and based on like the shear forces involved, it's going to be the same. What happens is you move the crush around, and the total crush is kind of the same, so you wouldn't see a change really.

Q Well, in terms of crush and the extent of crush, how much would be a lot and how much would be a little?

MS. FOGEL: Objection to form. You can answer.

THE WITNESS: They teach you in engineering school any change over 10 percent in a metric is a

lot. Double digit changes are a lot and you need to look into that. So the metric on dynamic crush is 22, 25 inches, so a couple inches would term it a lot.

Q (BY MS. SPAGNOLI): A couple inches, two inches, more or less?

A Ten percent of the, yeah, the metric. As I recall, dynamic crush on rear impacts is a little bit larger than 20 inches and somewhat less than 25.

Q Okay. And so if there were a five-inch change between a vehicle tested that had the same structure

and a vehicle test -- and another vehicle that was supposed to have the same structure, that would be a lot?

A A five-inch change --

Q Right.

A -- in dynamic crush would be a lot.

Q Okay. And would you agree with me that with respect to how a fuel system performs in a rear impact, that, again, a consumer driving in a vehicle should not be subjected to a potential failure because the vehicle they're driving is less likely to withstand crush in a rear impact than a similar vehicle that came off the production line?

MS. FOGEL: Objection.

Q (BY MS. SPAGNOLI): Do you understand my question?

A No, ma'am.
Q Okay. I'll start it over. If there -- would you agree with me that if you have two Jeep Grand Cherokees that come off the production line and one of them had a rear impact test that crushed five inches more than the next vehicle off the line, that would be a concern? Would you agree?
MS. FOGEL: Objection to the form. You can answer.
Q (BY MS. SPAGNOLI): In terms of fuel system

performance in rear impact.
A I would investigate where the crush went, and, yeah, if there was -- if there was a five-inch change between two subsequent tests in the car, that would be an unusual event that would send us looking --
Q Okay.
A -- for an answer.
Q And is that because you would hope that the vehicles would not have that significant of a variance one to the next off the production line?
A Yeah. I would hope that they don't have that much variation one to the other in the cars.
Q Okay. And is that because that type of variance could really dramatically affect the performance of the vehicle in impacts?

A The reason that I would pursue it, I think, would -- because I don't like variation in general, and as an engineer you're taught to the eliminate variation -- that's what you're after, and because it had performance in impacts, that was my job.

COURT REPORTER: I'm sorry.

THE WITNESS: Because it had a change in performance in impact or could have a change in performance in impact, I didn't want to see that kind of variation. I don't ever remember seeing

that kind of variation, but if there was that kind of variation, I would pursue it. Whether or not it changed the performance, pass or fail, in this impact standard, that's -- if there was that kind of information, as I sit here today, we would have looked at it.

Q (BY MS. SPAGNOLI): Okay. So, for example, if you have a Jeep Grand Cherokee -- and I think we looked at yesterday the stiffness of the vehicle. Well, let's look at the one you certified compliance for this vehicle. I'm going to give you, first of all, Exhibit 8, which is the fuel system integrity compliance report for the '97 Jeep Grand Cherokee, and take a look at that, and then let me get my -- my secretary doesn't believe in staples. She likes paper clips -- drives me nuts.

I'm going to mark as Exhibit 9 test 5967, which I believe is the test which you used to certify compliance of the '97 Jeep Grand Cherokee. And you'll find in here, I hope, the vehicle dynamic crush analysis.

A Yep.

Q Okay. On this one it's 19.9, correct, plus or minus one inch?

A Yeah.

Q So that's the range of expectation you have for the dynamic crush of the vehicle that was certified, correct?

A Yeah. This one is a little low, uh-huh.

Q So 20 -- so the range here would be 19 to 21 for dynamic crush? That would be an expected range, an acceptable range?

A Yeah.

Q Okay.

A The dynamic crush on this one is lower than I had remembered then.

Q Okay. But at any rate, given what you've said is your standard engineering judgement, plus or minus one inch would give us 19 or 18.9 to 20.9 as the range of crush that would be within the accepted margin, correct?

A The analysis has an accuracy of plus or minus one inch.
Q Right. And, again, the -- what you had considered to be a reasonable engineering judgement for expected crush on the '97 Jeep Grand Cherokee would be within, let's say, 19 to 21 inches or 18 to 21 inches, correct?
A The Grand Cherokee's rear impact crush, the way I recall it, was in the low 20's, and this test seems

to be at the edge of that distribution.
Q Meaning a vehicle that had less crush than other vehicles you recall testing?
A Yes, ma'am.
Q And would you agree with me that if the vehicle that you're using to certify compliance is one that experienced on the low end of crush, you would not want a consumer to be exposed to a vehicle that exceeded this -- let me withdraw.
Do you agree with me that if a vehicle crush was more than two inches above what you tested and certified as compliant with the standard, that you might have a concern about whether that vehicle would comply with the standard?
MS. FOGEL: Objection to form. You can answer.
THE WITNESS: You know, looking at the data

you've given me here about dynamic crush, and in an attempt to reconstruct what I would have thought when I saw this number, now that I have seen the crush patterns from the development tests and this one here in the compliance test, I could see that I would not be alarmed at all to see a 19.9 ring up as dynamic crush, and my reasons for that are when you look back on the series of tests that you gave me

here in Exhibit 5, and I look at the chart of histories for rear crush, rear impacts, I see a 19.9, I see an 18.9, I see a 21.2, I see a 22.2. They're all hanging in that same area, so this one here at 19.9, in my compliance test, at the time I would have looked right back at this chart and said, looks like it's in the normal course of events.

Q (BY MS. SPAGNOLI): Do you know if the tests that are listed on the chart you're looking at had leaks?

A That's not indicated here on the chart. We could go back through the data and look.

Q Well, is it a pass if it leaks?

A It is not a pass if it leaks.

Q Okay. Do you know if the leak pass or fail was dependent on how much crush you had?

A No, I don't think that it was. There was -- in the '96 and '97's, the mechanism -- there are actually

two mechanisms that were fixed, identified and fixed, and neither one of them really had to do with dynamic crush.

Q Okay. So you don't believe with respect to the '97 Jeep Grand Cherokee that a change in dynamic crush plus or minus, let's say, four inches would be a reason to be concerned that a vehicle on the high end of crush would not be able to comply with the

standard?

MS. FOGEL: Objection to form. You can answer.

THE WITNESS: No. I don't think that the way we measure dynamic crush really has a lot to do with the performance of this fuel system in crash tests.

Q (BY MS. SPAGNOLI): Okay. So you would be confident that if you took a '97 Jeep Grand Cherokee that was at the high end of those vehicles that you tested and were within the range that came off the production line -- let's mark it at 23 inches -- you would not be concerned that that vehicle would be able to comply with the test; is that what you're telling us?

MS. FOGEL: Objection to form. You can answer.

THE WITNESS: The basis of using dynamic

crush to predict its performance in the test, I don't believe, is invalid. I don't think that dynamic crush is a predictor of performance in the test. The 23 inches, we have vehicles that have crushed in that range in the rear impact test, and if I ran one and I got 23 inches, I wouldn't presume to say it would fail. I would look at the test and

I would look at how the systems interacted with the body frame, and those are the indicators that predict whether or not it was on the edge of passing or firmly in the middle of passing.

The dynamic crush, the way it's measured, can be a misleading number sometimes the way it's measured. It's -- the dynamic crush doesn't exactly lead you to performance of the fuel system.

Q (BY MS. SPAGNOLI): With respect to your understanding of the structural construction of the '97 Jeep Grand Cherokee, would you agree that it would be within the manufacturing tolerances for this vehicle for a '97 Jeep Grand Cherokee to have crush characteristics that would allow up to 23 or 24 inches of crush in a rear impact?

A I have data here that shows some 22's, some 23's and some 18's, so that appears to be the variation distribution for tests of this weight. You would

really want to look at the weight of the car and how the exact speeds line up. You know, there's variation in the speed of the bullet that hits it, so those are the -- really the contributors to the energy.

Q So given your prior testimony concerning engineering judgement as far as reasonable variation, ten

percent, you said, was a lot?

A Ten percent is a lot of variation.

Q All right. In the case of the Jeep Grand Cherokees that you tested, given the plus or minus 10 percent, do you agree with me that the range you might get in a Jeep Grand Cherokee is anywhere from 16 to 25?

MS. FOGEL: Objection to form.

THE WITNESS: I never saw either one of those at the distribution at the ends, but that is a 10 percent at each end of it from what we did observe.

Q (BY MS. SPAGNOLI): Okay. So that would be a range given what you tested of dynamic crush in a rear impact for this '97 Jeep Grand Cherokee?

A I'm looking for maximums.

COURT REPORTER: I'm sorry?

THE WITNESS: I'm looking for maximums. Twenty-five at the high end is what you could expect. Sixteen -- 25 to 16, I would say, is a

normal range for this vehicle, you know, at the kinds of weight and speeds that we hit it.

Q (BY MS. SPAGNOLI): Okay.

MS. SPAGNOLI: Let's go off the record and take a short break.

VIDEO TECHNICIAN: Going off the record at

9:34 a.m.

(Off the record.)

VIDEO TECHNICIAN: Back on the record at 9:44 a.m.

Q (BY MS. SPAGNOLI): Mr. Estes, if you could look back at what we marked as Exhibit 3, which was the compliance report for the 1995 Jeep Grand Cherokee, and you look at the --

A Exhibit 3 in mine is the '96 --

Q Oh, I'm sorry. Do you know what, because if you look at the attachments, it says '95, so I'm assuming that that's just a typo then? I'm looking at page 6, the 'ZJ' Body Jeep 'Grand Cherokee' Sport Utility, Summary III.

A The dates are all the same. Yeah, looks like a typo.

Q Okay. So the three tests that are listed on page 6 for fuel system integrity for rear impact were actually the tests that were used to certify

compliance for the '96 vehicle; is that right?
A There are two rear impacts on page 6 that were used to comply the car.
Q Okay. And those two are 4472 and 4561, correct?
A Yep.
Q And then if you look at the exhibit that I gave you,

Exhibit 8, which is the '97 model compliance report, and you look at Summary III for the rear impact, there's now, instead of those two tests, there's test 5967 that certified compliance; is that right?
A Yes, on page 6 it says 5967 certified rear impact compliance.
Q And if you look at the description of the vehicle, is there anything in the discussion section which would suggest that there were changes between '96 and '97 that required a new compliance test?
A In the summary on page 6, it notes a reinforcing bracket, vehicle model description. Now, which description were you talking about?
Q Well, where did you see the reinforcing bracket?
A Just a second -- page 6, is it?
Q Right.
A Six, page 6, description of vehicle 5967, the last line says "MPI engine and reinforcing bracket."
COURT REPORTER: I'm sorry.
THE WITNESS: "MPI engine and reinforcing

bracket."
Q (BY MS. SPAGNOLI): Right. Okay. So does that reinforcing bracket addition, did that in and of itself require a new compliance test?
A I thought it was a significant structural change and

required a new test.
Q Okay. Do you see on page 1 or 2 where there's a discussion about the vehicle?
A Just a second. There's a section here that says Discussion. I guess it's two. It doesn't say on mine, but --
Q Did you write that section?
A These documents for the most part are cut and paste from the year before, and I issued the document but I don't believe I actually wrote this part.
Q Okay. Do you see, though, in the first paragraph it says, "The Chrysler Corporation 1997 'ZJ-74' Body, Jeep 'Grand Cherokee,' Sport Utility vehicle is essentially carryover from the 1997 model?" I'm assuming that's a typo, again, and it should be '96 model?
A Yep.
Q And then it says, "With the exception of fuel filter relocated to the top of the fuel sending unit module." Have I read that correctly?

A Yes.
Q And isn't it true that in this portion of the report you are supposed to document any changes that required a new compliance test?
A I don't know whether it's supposed to go in this

portion of the report or in the back in the description of each of the test vehicles. I'm unclear as to the exact area I'm supposed to put the description.
Q Okay. But you signed both the '95 and the '96 compliance report?
A Yes, I did.
Q And you're telling us you didn't know what you needed to put in each section?
A I don't remember now. I might have known it then, but today, to ask me a question where everything goes, I don't remember.
Q Well, there's nothing in your description on page 2 that carries over to page 3 that suggests that there was a significant structural change in the '97 Jeep Grand Cherokee that required a new compliance test, correct?
MS. FOGEL: Objection to form.
THE WITNESS: Well, ma'am, down here in the section where it says, "The rear structure of the 'ZJ' is available in four different build levels.

The 'ZJ' can have a Trailer Hitch, skid plate or a Reinforcing Bracket and a combination of skid plate and Trailer Hitch."

Q (BY MS. SPAGNOLI): Okay.

A Does it talk about the reinforcing bracket on the '96?

Q No, it doesn't reference it.

A Well, then I did describe the change there.

Q Okay. Did you describe the change as being a significant structural change between the '96 and the '97?

MS. FOGEL: Objection to form. You can answer.

THE WITNESS: I don't remember now whether adding the text was sufficient or did I have to do something else to highlight it. I think -- I think you're just supposed to add the text.

Q (BY MS. SPAGNOLI): Okay. What you did say was that the vehicle was essentially a carryover except for the fuel filter relocated to the top of the fuel sending unit module, correct?

A That's what I said.

Q And when you used the word essentially carryover, that means that there is nothing else that is a significant change from the one vehicle to the next,

22 correct?
23 MS. FOGEL: Objection to the form. You can
24 answer.
25 THE WITNESS: Given the 25,000 different

1 parts that go into a car, one extra part which we
2 described makes it different, but it's the same car
3 for most intents and purposes. There are small
4 differences which I hope I captured everywhere, but
5 I don't remember all of them, but it is essentially,
6 in my definition of the word essentially, the same
7 car.
8 Q (BY MS. SPAGNOLI): Okay. Well, can a bracket be a
9 small change but a significant change?
10 A Yes, it can.
11 Q And is that what you're saying occurred between the
12 '96 and '97 model?
13 A There is the change of the bracket between the '96
14 and '97 model.
15 Q Is it a small change or a significant change or
16 both?
17 A Small is always in scale relative to something else,
18 and relative to the entire performance of the whole
19 car in its all encompassing crash test performance,
20 adding one little bracket to modify the rear impact
21 looks small, but for the rear impact section of it,
22 it is a change that allows difference in performance

for that piece of it, but there are 13 other tests that this document does cover, and one of 13 is modified slightly by a bracket that we introduced.

So in my mind it becomes nitpicking over the word essential and the word small. They're there.

Q Give me one second. These are out of order. I'm going to mark -- I want to go through some of the other crash tests with you for the '97 vehicle, or actually some earlier ones than that. The first one I'm going to mark is crash test 5199, and let me look at the list that Ms. Fogel read me yesterday. I don't see 5199 on the list of crash tests that you looked at before your deposition, so I'm going to present to you Exhibit 10 and ask you to take a look at that.

MS. FOGEL: Do you have a copy of that for me?

MS. SPAGNOLI: I only have two. I thought you had all the crash tests with you. Wait. Here it is.

MS. FOGEL: I just want to see what you're showing him and then I'll give it back to you.

MS. SPAGNOLI: Here's an extra one. Here's an extra one. I got it. It's extra.

Q (BY MS. SPAGNOLI): Okay. Have you had a chance to

look at that one?
A I've reviewed it slightly.
Q Okay. This vehicle -- have you seen this test

before?
A I don't remember it but it should have been shown to me earlier, yeah. When I started the job, this was one of the ones done just previous to my arrival, so I don't recall, but I should have seen it.
Q So you should have seen it back in '95?
A Yeah.
Q Okay. And how did this 1993 production ZJ modified to represent a '96 fuel system perform in this 301 impact test?
A It failed the rear impact test due to post-test pressure leaks.
Q And where do you see that?
A That's documented here under Post Test Remarks under the Vehicle Crash Test Letter, page 2.
Q Okay. Do you know where the leaks were that caused the fuel system not to hold the pressure?
A I don't recall on this test where they were, no.
Q Do you have any idea what was done, if anything, to address the failure of this vehicle on this crash test?
A No, I don't. I don't remember.
Q Okay. What was the dynamic crush on this test?

24 A This was a big one. This is 23.1.
25 Q Okay.

1 A The speed was also three-tenths of a mile higher on
2 this one.
3 Q Did this vehicle have a trailer hitch?
4 A No. In fact, there's explicit direction to have the
5 trailer hitch and skid plate removed.
6 Q Okay. Was the -- were the '96 -- '93 to '96 model
7 Jeep Grand Cherokees dependent on the presence of a
8 trailer hitch in order to comply with the 301 rear
9 impact standard?
10 A No.
11 Q So you would not have expected a different
12 performance in terms of compliance in the rear
13 impact test between a '93 to '96 Grand Cherokee that
14 had a trailer hitch versus one that did not?
15 A In terms of the compliance as to whether the fuel
16 system passed or failed?
17 Q Right.
18 A It should have passed in either condition, with or
19 without the trailer hitch.
20 Q Okay. Do you know what the '96 fuel system was like
21 compared to what became the '97 fuel system?
22 A I don't really remember the exact details of what
23 was there. As we've been going through this over

24 the last couple days, I was trying to remember what
25 we replaced, and I'm sure I knew that, but I really

1 can't remember too much about it now.
2 Q Well, was the '95 fuel system a co-extruded fuel
3 tank like the type of fuel tank that you put in the
4 '97 model?
5 A I don't remember. I don't think so, but I don't
6 remember.
7 Q Well, this says "Proposed 1995 co-extruded fuel
8 tank." That would have been a tank put in a vehicle
9 basically on your watch, right?
10 A This tank, this model, I know about -- oops -- that
11 model and what that tank was, but what was there
12 previous to it, I don't remember.
13 Q You know what the '95 co-extruded fuel tank was
14 like?
15 A Yeah, the proposed one for '95.
16 Q How is it different from the one in '97?
17 A It was a co-extruded plastic tank that was to be an
18 improvement for emissions. What it replaced, I
19 don't really remember, but I know about this tank.
20 Q I'm not asking what it replaced. I'm asking you the
21 difference between the '95 and the '97 fuel tank.
22 A The '95 tank is the one that was in place before I
23 got there, and that's the one I don't really
24 remember its details for.

Q Okay.

A This proposed tank never made it for '95 and it didn't make it for '96. Its design sibling is the '97 tank.
Q Okay. So when it says "'93 production ZJ modified to represent 1996 fuel system," you know what the '96 fuel system is that this is referencing, correct?
A Yes. It's a design intent. They want to put it in in 1996 and that's the system which I have some familiarity with.
Q Okay. And that's the one you were working on that didn't get in until '97?
A Yes, ma'am.
Q Okay. So is there -- can you tell us what changes, if any, were made to the fuel system from the proposed '96 fuel system that actually -- into the actual production '97 fuel system? In other words, what happened between this point and when you ultimately got the new fuel system in the '97?
A Just to the fuel system itself?
Q Correct.
A I wasn't the fuel system design and release --
COURT REPORTER: I'm sorry.
THE WITNESS: I wasn't the fuel system

25 design and release engineer, and the changes that I

1 recall involve the fuel sending unit. There is
2 what's known as a mason jar on top of it, and it --
3 in one of the tests of which off the top at the
4 moment I don't recall which one, it cracked -- the
5 top of the tank cracked, and we reinforced that. We
6 added little feet to the bottom of it. There were a
7 series of design changes of which I'm not sure all
8 of, but it was the intent to prevent the top of the
9 tank from having a leak in the impact event. There
10 was a series of design changes. I remember the
11 reinforcement and I remember the little feet but
12 there were probably other things in there that I
13 don't recall.
14 Q (BY MS. SPAGNOLI): Okay. And, again, with respect
15 to test 5199, in terms of why the pressure check did
16 not hold, you don't have an explanation for that?
17 A No, I don't really know why that one didn't hold
18 pressure.
19 Q Let me mark as Exhibit 11 test 5208. And, again, I
20 don't think this was on the list of tests that you
21 looked at before your deposition, so if you'd like
22 to take a moment to look it over. I'll ask you
23 questions about it.
24 MS. FOGEL: Is this an extra, Christine?
25 MS. SPAGNOLI: Yeah.

Q (BY MS. SPAGNOLI): Okay. Have you ever seen this test report before?
A I don't remember it but I'm sure I looked at it at the time.
Q Okay. This test was run in July of 1994, and so that would have been just before you came to become manager of the Jeep Grand Cherokee test program?
A Yeah. It's before I was manager there.
Q But certainly it was a test that was attempting to test the vehicle with the modified fuel tank?
A Yes, it was a test of the new tank, yes.
Q Okay. This is called a 1995 C1 pilot - production built. So does that mean that in all respects except for the fuel tank this vehicle was a production '95 Jeep Grand Cherokee?
A That's the description in the test letter, yes.
Q Okay. And what happened on this test?
A It leaked in excess of the federal limit in the rollover, is what it says in Post Test Remarks.
Q Do you know why?
A I don't remember this specific one, no.
Q So you have no explanation for where the leak came from?
A No.
Q Okay. It's not noted in the report, is it?

A No, no, it's not.
Q Okay. So you can't say that the leak here was from the fuel tank versus something else with respect to the vehicle; is that right?
A Yeah, I cannot say that.
Q Okay. You can't tell whether this tank leaked because the tank hit the differential or there was contact between the frame rail and the vent and fill lines, correct?
A The cause of the leak is not clear.
Q Okay. What is the dynamic crush measurement for this vehicle?
A This one -- let's see here. This one is lower than the previous one. The speed was lower and the crush was lower -- crush, crush, crush -- this one was -- my copy says 19 and there's no digits --
Q Okay.
A -- smaller than that, so this one looks like 19, but, you know --
Q Okay. And you said the speed was lower. The speed here was 30.4 miles per hour, correct?
A Yeah, uh-huh. And on my chart, I have -- in Exhibit 5, I think this is --
Q Right.
A -- you gave me -- I've got it listed as 19.9 and

that's what makes me wonder if the photocopy didn't blip off the .9.

Q Okay. All I can tell you is this is what we got, and it doesn't have a .9 after it.

A Yeah, I know.

Q Okay. Next I want to show you test 5493, and I'll mark this as Exhibit 12. And this is one of the ones that counsel showed you the day before your deposition, and this appears to be a test that was conducted with you as the manager of the crash test program for the Grand Cherokee, correct?

A Yes, this would have been one of the tests that I ran.

Q Okay. This vehicle is a 1996 C1 pilot built vehicle production intent. What does that mean?

A When you build the pilots, they're the final tryout of the production system, and that's how you intend to release the car as you go forward, but there are sometimes issues of all sorts in the assembly plant as one starts to build them and they need to get fixed, so the intent is to build it this way. This is a pilot car. We build pilot cars to try the manufacturing system out. That's why it's not as produced but as intended.

Q Okay. What fuel system did this vehicle have?

A It does not describe the fuel system as anything different than the 1996 production. There is, therefore, an assumption that it would be in the 1996 production system.
Q From what you've told us does that mean that the fuel system here is one that was not the new system that you were attempting to introduce for the '96 model; it was actually the carryover from the prior model?
A That's the assumption that I'm going to make because there is no explicit direction anywhere in the thing that I could see to change the system away from the 1996 production intent system that the vehicle came with.
Q Okay. And this test, is there any fuel leakage in this test?
A Just a moment. Is the crash test letter here? There was no leakage.
Q And what is the dynamic crush for this vehicle?
A This one says it's 20.0.
Q Okay. And was there -- let me withdraw.
From what you've told us, this is a test that you would have observed or looked at the films, correct?
A Yes.

Q And in keeping with what you've told us earlier, even though it is not noted on this crash test report, your expectation is that the fuel tank would have contacted the rear axle and the fuel lines within the frame rail would have had some contact; is that right?

MS. FOGEL: Objection to form. You can answer.

THE WITNESS: I would have expected that the fuel tank contacts the rear axle, and the fill and vent lines had a contact with their pass-through hole.

Q (BY MS. SPAGNOLI): Okay. Let me show you crash test 5 -- let's do these in timing order here. Hold on one second. This is test 5339, and I'll mark it as Exhibit 13.

MS. SPAGNOLI: Counsel, I only have one of these.

MS. FOGEL: If I could just look at what you're handing him.

MS. SPAGNOLI: Yes, absolutely.

Q (BY MS. SPAGNOLI): While she's looking, I'm going to ask you to go back to 5208, and at the top it says "Hot Test." What does that mean?

A The date that the issue of the vehicle test request

is 7-23, and then we wanted it run by 7-26, which is three days, which is a shorter amount of time than typical proving grounds preparation of a vehicle.

Q Do you have an understanding as to why a hot test gets run?

A There's a lot of reasons. There could have been a need for this test to meet timing and development. I don't know why this test was listed as hot.

Q Okay. If in July of 1994 this vehicle is basically a production built vehicle without any significant changes from the prior vehicle models that had been certified in compliance, why would a new 301 test have been run?

A The significant difference between this vehicle and previous models was the new fuel system with the co-extruded tank and that's why they ran the test.

Q Okay. I thought we had -- maybe that was the other test. This one is one that I thought was with the fuel system that was the carryover.

A Well, we're talking about test No. VC5208?

Q Yes.

A The description on my --

Q Oh, you're right.

A -- shows the co-extruded tank.

Q Okay. So was this 5208 the version of the tank that

you inherited when you were trying to get the new tank to --

A It was the design intent. The versions change. You know, after every time they run a test and it doesn't work, they try to fix it and they run it again.

Q Okay.

A So exact version, probably not, but that intent.

Q Okay. Let's look at 5339 which counsel has now handed you. This is Exhibit 13. This a test run in December of 1994, and, again, this test was run at your direction, correct?

A Just a second. Yes, I issued the test request.

Q Okay. And how is this vehicle -- well, this is an actual 1994 production vehicle, correct?

A Yep, that's its description.

Q So nothing different in this test in 1994 from the earlier versions from what you can tell from the build condition description; is that right?

A There's an interesting note to me here and I don't recall why we did it, but we do have a pressure test transducer in the gas fill vent line, and that strikes me as an unusual piece of instrumentation but I don't know why we did that, so other than that, I do not see a difference why I would have

inserted a pressure transducer in the fill line. I don't see why.

Q Is a gas fill vent line the line that you've described previously that goes from the tank through the pass-through hole in the left side frame rail?

A Yeah. I think that I'm describing the same line that goes through the pass-through hole.

Q And what does a pressure test transducer tell you?

A What the pressure transducer should tell you is the change in atmospheric pressure or liquid pressure in the local area of the transducer. There in the gas fill vent line it should tell you the liquid or air pressure.

Q Why would that be something you would want to know?

A You know, I just don't remember. I looked at this and went, why is that there.

Q Well, in general why would that be something you would want to measure?

A To measure the pressure inside the vessel would indicate whether the pressure in the vessel was changing during the test.

Q Why would that be important?

MS. FOGEL: Objection to form.

THE WITNESS: The pressure in the tank, it could be important if it rose a lot. If it changed

a dramatic amount, I guess it could be important. I don't remember much about this transducer or why it was there.

Q (BY MS. SPAGNOLI): Well, would it be important also to find out if you are not able to hold pressure?

A Yes, that would be important to not hold pressure. That's part of our standard post test --

Q And not holding pressure would indicate some type of a potential leak, correct?

MS. FOGEL: Objection to form. You can answer.

THE WITNESS: The post-test pressure check indicates a leak if the post-test pressure check fails.

Q (BY MS. SPAGNOLI): And in the normal circumstances of the test, do you just check the pressure in the tank or do you also check the vent and filler line?

A In the normal rear impact tests, we don't check the pressure at all. This pressure transducer is unusual.

Q Okay. And from looking at this test, you cannot explain why that was done in this instance?

A No, ma'am, I don't know and don't remember why I added this pressure test transducer.

Q Now, in the Post Test Remarks for this December 1994

test, the engineer noted, "That the fuel tank was contacted by the rear axle, the rear sway bar and sway bar bracket, and by the rear exhaust system." Have I read that accurately?

A I wasn't on that page. Just a second. The fuel tank was contacted by the rear axle, the sway bar and sway bar bracket, and the exhaust system, that's correct.

Q Now, from what you've told us, those are not necessarily unexpected contacts from your experience with this vehicle, correct?

A Yes. Those would be normal contacts.

Q And this would just be an occasion where the engineer happened to note it even though it was something that had been occurring regularly in the Jeep Grand Cherokee test, correct?

A Yep, yep. Let me look who the engineer was. Yep, he just wrote it down.

Q Okay. And did you do anything when you got that report to address the fuel tank contact with the rear axle, the sway bar, the sway bar bracket and the exhaust system?

A Not that I --

MS. FOGEL: Objection to form. You can answer.

THE WITNESS: Not that I recall.
Q (BY MS. SPAGNOLI): You didn't recommend any changes to address that contact; is that right?
A Not that I recall, no.
Q Okay. Can you tell us what the dynamic crush was on this vehicle? I think it's way towards the back. 4043 is the page.
A This one was 22.2, the relative speed of 30.4.
Q Oh, we've already talked about 5380. That's why I was wondering -- so I'm going to put that one down. Let me get 5441. I'm going to mark as Exhibit 14 test 5441 from April of 1995, and, again, this is on the list of tests you looked at just before your deposition. Now, this vehicle was also tested at your direction, correct?
A Yes, ma'am.
Q And it's described as a 1994 production built ZJ Grand Cherokee modified to represent 1996 production for rear impact. Can you tell us what it was about the rear impact changes that were made for the 1996 production? In other words, what was it that was different in the '94 production vehicle that was changed to represent the 1996 production intent?
A What it says is that there was -- the co-extruded fuel tank with the reinforced sending unit cover,

the steel fuel rails with matching line bundle, the rear liftgate with a fixed glass and a reinforced bumper bar, fascia and brackets for 1996.

Q With respect to the co-extruded fuel tank, that's the tank we've already discussed and you said was not actually implemented till '97, correct?

A Yeah, this is a design change, this one subsequent to 5380, right?

Q Right.

A Yeah, and the 5380 is an earlier test and the one earlier we looked at earlier where the top cracked and we've gone back to try to reinforce the top now, and that's noted here. I didn't remember that there were these other changes.

Q Oh, I'm sorry. You know, I don't think I did ask you, but can you go back to 5380 and let's talk about it more specifically. Maybe we did cover this and I apologize if I've already talked about it. 5380 is the February '95 test that had the partial separation of the vent line fitting from the tank, so we did talk about that. You said you had to reinforce that weld at the --

A The weld --

Q -- at the tank?

A -- on the tank on this one --

Q Okay.
A -- was bad.
Q So now we're looking at the next test in April of '95, and that reinforced sending unit cover has been --
A Tested once, at least once, both on 5380 and now again on 5441.
Q And you believe there was something else done to reinforce the vent fitting?
A Yes, I believe there was. I recall having a meeting with our design release engineer, and she took our data and the part back over to the supplier, Cotech, to investigate the cause of this welding.
Q That had to do with the failure on 5380, correct?
A Yes, ma'am.
Q Now, in this 5441 test, there's a reference to 1996 steel fuel rails and matching line bundle. What is that?
A I don't remember.
Q The next item says "1996 rear lift gate with fixed glass." Do you remember how that rear liftgate differed from the '95 version or '94?
A Somewhere along in here, there's a fixed glass and a flipper glass, and occasionally we make note of it. The fixed glass is, you know, glued in and then

there's a flipper that allows the glass itself to rotate up.

Q So you can open it?

A Yeah. And I think that we make a difference of -- between the two on these tests, and I don't recall anything else different between the liftgates.

Q Okay. What about the reinforced bumper bar fascia and brackets, what is that?

A You know, I don't remember that at all.

Q Okay. Now, if we look at the static rollover summary and the test result, this one had a failure of a leak during the static roll after the impact on the test, right?

A Yes.

Q And then the note by the engineer says there "appears to be a faulty rollover valve?"

A Yes, ma'am.

Q What is that?

A The tank needs to draw air in to the tank as it uses fuel so it doesn't create a vacuum, and in that air inlet valve, there is like a snorkel, a ball, and when the vehicle is turned upside down, the ball is supposed to seal the valve. In this particular one, I remember we opened it up, looked at the welding on the plate that had failed previously. It was fine,

was missing in the valve, so that when it turned over, the fuel just ran out.

Q Okay. Can you tell me if there is a dynamic crush measurement for this test vehicle.

A I don't see one attached to this document as given to me.

Q Okay. And this is not on your chart, is it?

A Let's see here. No, my chart is dated 3-3-95, and this test was run a month later, more or less. Here in the test letter, if you look, it says vehicle velocity and dynamic crush only if requested, and it must not -- either it's not attached or it didn't get requested.

Q Okay. Let me hand you Exhibit 15. This is test 5681, also on the list of tests that counsel showed you before your deposition.

MS. FOGEL: Let the record reflect that the tests that were shown to the witness before the deposition included the Vehicle Crash Test Letter, the Vehicle Crash Test Request, and did not necessarily include some of the other pages that were included in some of these exhibits which include things like dimensions, drawings, and photocopies of photographs.

showed him were only the letter and the vehicle test request specifically, in each of the tests that you listed for me?

MS. FOGEL: To my recollection, yes.

MS. SPAGNOLI: Okay.

Q (BY MS. SPAGNOLI): All right. If you could -- I mean, when you're ready.

MS. FOGEL: Let me take a quick look before we hand it to him because I don't have a copy of this. Okay.

Q (BY MS. SPAGNOLI): Okay. This test is dated November 1995 and it says it's a 1997 USA 301 development test, so you're looking at a test of a vehicle that is meant to represent the production 1997 vehicle; is that right?

A Yeah. It's a '97 production intent vehicle.

Q Okay. And it says it is a 1996 production ZJ that's being tested and it has some modifications to reflect the 1997 model; is that right?

A Yes.

Q And with respect to those changes that affect the fuel system and their performance on a rear impact test, is the 1997 fuel sending unit and fuel tank the only difference between the 1996 production

vehicle and the '97 model?

MS. FOGEL: Objection to form. You can

answer.

THE WITNESS: In the description, it states explicitly there was a body-in-white, body -- bracket, body-in-white reinforcement under the floor pan for the 1997 design intent, so I believe that it had the new gas tank as described, '97 fuel sending unit and '97 fuel tank design and the bracket on the left side.

Q (BY MS. SPAGNOLI): Okay. When it says reinforcement under the floor pan, that -- you believe that's referencing the left side frame rail bracket?

A Yes, ma'am, it's under the floor pan.

Q Okay. And this vehicle had a fuel leak at impact, correct?

A Yes, it did, as stated here.

Q Does anything in this documentation tell us what -- why there was a leak in this test?

A Just a minute. Yeah, there's -- I think it only says fuel leak at impact on my copy, but it's an extraordinarily poor copy for those texts.

Q Is that for the notes that the engineer wrote?

A Yes, the Post Test Fuel System Observations.

Q "Fuel leak at impact more than five ounces?"

A Yeah, it does say "more than five ounces" quite

clearly but I'm not quite sure what it says before that.

Q And why is a fuel -- what is a fuel leak at impact on the test, because there's a number of stages that you check for leaks; is that right?

A Yep.

Q So what does a fuel leak at impact tell you?

A In the barrier room -- it's an enormous room like a barn -- when the vehicle is hit by the bullet, it began to leak right there. There was no subsequent pressure test; there was no rollover. Leak at impact means that it leaked in the test facility.

Q Okay. And you said bullet. You mean the moving barrier?

A There's a moving barrier, yes, commonly referred to as the bullet vehicle, but, yeah, it's the type IV 301 rear moving barrier.

Q Okay. In other words, this vehicle wasn't struck by a car; it was struck by a flat plywood moving barrier?

A Struck by the normal required 301 barrier.

Q Okay. And was it struck at the test speed of 30 -- over 30 miles an hour?

Q Now, when it says Post Impact Leakage, it says "At impact greater than five ounces." What is the test requirement for leakage at impact on the 301 test, the standard?
A Just a second. It was in -- referenced in something you gave me yesterday. We'll find it in a minute -- your Exhibit 10.
Q You're looking at the Ginny Fischbach presentation?
A Yep, your Exhibit No. 10 that you gave me, it listed the test requirements for leakage and on the page -- it says 5124 -- "one ounce (by weight) during impact motion." I believe that was the answer to the question.
Q Right. That's the standard that the government has, correct?
A Yep, uh-huh.
Q And in this case, a greater than five ounce leak would have exceeded the standard, right?
A Oh, yes.
Q And it also would have exceeded the Chrysler internal guideline --
A Oh, yeah.

Q -- which is zero leakage?
A Zero leakage.
Q Okay. So in this case we had a leak that both did

not comply with Chrysler's requirement nor did it comply with the government test standard, correct?

A That's correct, ma'am.

Q And then Post Impact Leakage, first five minutes, it says there's another greater than five ounce leak so that's the five minutes the vehicle is sitting after the impact; is that right?

A Just a second. I have to find that. Yep, that's what it says.

Q And, again, what is the government standard for leakage during the first five minutes after the impact?

A The first five minutes is five ounces.

Q Okay. So, again, in this instance, the leak after impact in the first five minutes also exceeded the government test standard, correct?

A Yes, it did.

Q And it also exceeded Chrysler's standard, correct?

A Yes, it did.

Q Do you have an understanding as to where the leak came from in this test?

A In this one, I don't remember.

Q Okay. And there's nothing in the test itself that notes why there was a leak in this test --

A No.

Q -- correct?

A No, there's no good memory joggers for me in this test.
Q And how much was the dynamic crush in this test?
A Just a second.
Q Back at the back, 3144.
A This dynamic crush is listed at 21.1, and the speed was 30.2.
Q The speed was 30.2?
A Yes, ma'am.
Q Now, since there are no memory joggers in this test report, or all the documentation that I've handed you --
A Well --
Q -- are you telling me --
A -- now that I'm looking through it quite completely --
Q Yeah.
A -- there's the very, very last page.
Q Right.
A And even though it's not a very good photocopy of it, I think it's telling me that the lid at the top

of the mason jar cracked again.
Q What are you looking at that tells you that?
A This is 3163. There's a photograph, and the large white section here should have been a complete

circle.

Q Well, why does that tell you there may have been a leak there?

A The photograph -- and it's really hard to tell, and like I said, I don't quite remember all of it, but you asked me if there was any evidence as to why I thought this one leaks. I think that this one leaks due to the top of the fuel sending unit again leaking.

Q Are you guessing?

MS. FOGEL: Objection to form.

THE WITNESS: The photograph indicates that to me.

Q (BY MS. SPAGNOLI): Well, the photograph doesn't actually show any fluid leak, does it?

A No. It does show here, if you notice, "Post" written on it.

Q Right.

A And the time and place that this post test would have been taken is after disassembly in the vehicle development garage after we drained all the fluid

out of it.

Q Right. And so other than looking at this picture, you have no recollection at all of what, if any, source of leak there was in this test; is that right?

MS. FOGEL: Objection to the form. You can answer.

THE WITNESS: This picture -- until I saw this picture, I did not remember why this vehicle leaked at all. Looking at this picture, I have a hint that it probably was the fuel sending unit.

Q (BY MS. SPAGNOLI): But you can't say that for sure?

A No, because I don't remember.

Q And if you look at a couple pictures further back, 3159, do we see a picture of the fuel tank in contact with the differential?

A Yeah, I think you do.

Q And do we see that there actually appears to be an indentation in the tank where the tank and the differential come together?

MS. FOGEL: Objection to the form. You can answer.

THE WITNESS: I don't think that's the differential causing that dent.

Q (BY MS. SPAGNOLI): There's a dent right there,

isn't there?

MS. FOGEL: Objection to the form. You can answer.

THE WITNESS: Given the quality of these photographs, there's a -- there's a black spot,

right, and I think what that black spot is is where the paint came off. That's what I think that spot is. I don't think it's a dent. That's what I think that spot is.

Q (BY MS. SPAGNOLI): In the immediate area of the black spot -- why don't you hold that photograph up for the video camera. Point to what you're referring to as this black spot.

A See the little spot here?

Q Yep. And is that right at the location where the differential's furthest edge or point is in contact with the tank?

A Yeah, it is.

Q And do you know if there was a leak there?

MS. FOGEL: Objection to form. You can answer.

THE WITNESS: If there was a leak right there where it could be easily seen after the test, that had a very high probability of being noted. I would expect that any leak right there where you

could see it like this on the lift, someone would have written that down, because this is obvious, and it would have been unusual for it -- on this big round surface for it to have caused a leak.

Q (BY MS. SPAGNOLI): Okay. If there is contact like that -- and clearly there is contact between the

differential and the tank in this picture, right?
MS. FOGEL: Objection to form.
THE WITNESS: I can't tell whether there's contact or not. There's no contrast. There's a couple of black dots.
Q (BY MS. SPAGNOLI): Well, if the paint was scraped off, then that would suggest there was contact, right?
A Yeah, it would. I mean, it suggests it, but to say that there was clearly contact --
Q Well, if there was contact but not a leak in that location, that's again an acceptable result?
A Yes, contact but not a leak, that's pretty normal.
Q That was -- for this vehicle it was normal?
A Yes.
Q Okay. Are you saying it's normal for other vehicles?
MS. FOGEL: Objection to form.
THE WITNESS: I was intimately familiar

with the Grand Cherokee vehicle development and it's normal for this vehicle.
Q (BY MS. SPAGNOLI): And so you can't say with respect to other vehicles; is that right?
MS. FOGEL: Objection to form. You can answer.

THE WITNESS: Other vehicles which I was responsible for, it would have been normal.

Q (BY MS. SPAGNOLI): What other vehicles were you responsible for?

A The Wrangler. It was called TJ. It had the same kind of contact with its rear differential that this one does, similar.

Q And the other vehicle that you were responsible for?

A The TJ and the XJ, which is a Cherokee.

Q And was contact between the differential and the fuel tank normal on the XJ?

A Yes.

Q Was there anything done on the Cherokee to try and eliminate or reduce the effect of contact between the fuel tank and the differential in that vehicle?

MS. FOGEL: Objection to form.

THE WITNESS: Not that I recall.

VIDEO TECHNICIAN: Five minutes left on the tapes.

MS. SPAGNOLI: Okay. Let's change tapes.

VIDEO TECHNICIAN: Going off the record at 10:41 a.m.

(Off the record.)

VIDEO TECHNICIAN: We're back on the record at 10:52 a.m.

Q (BY MS. SPAGNOLI): All right. Mr. Estes, just to

clarify, if we look back at Exhibit 15, there is a clarification apparently or a correction with respect to whether the vehicle tested in 5681 had the left frame rail reinforcement bracket. Have you determined that that was not an accurate description of the bracket that we see here?

A Yeah. After a complete review of the build condition for vehicle 5681, I believe I misspoke earlier, and that the bracket and body-in-white reinforcement under the floor pan is not the one in the rear of the vehicle but associated with the air bag electronic control module.

Q Okay. So the vehicle that was tested here did not have the left frame rail reinforcement bracket; is that right?

A Yes, it does not indicate that reinforcement bracket. It indicates a different one.

Q All right. Now, let me ask you to look at Exhibit

16 which is test No. 5789 from January of 1986. Now, earlier when I've asked you if you've seen these before, counsel has pointed out that the documents she gave you in connection with the crash tests were, as previously noted, the Vehicle Crash Test Letter and the Vehicle Crash Test Request but not the attached data including the dynamic crush

report and the photographs or transducer data; is that right?

A That's correct. I hadn't seen the transducer data or photographs in some of the reports which are now attached.

Q Okay. So what I'm showing you is an addition in each case to the reports that were shown to you by counsel; is that right?

A Yes, ma'am.

Q Okay. Now, in 5789 the vehicle that we have here is a 1996 production ZJ, again, modified to represent the 1997 vehicle, correct?

A Which test?

Q 5789, Exhibit 16. Do you have that?

A No.

Q Oh, sorry.

MS. FOGEL: Sorry.

THE WITNESS: Thank you. 5789 -- what was

the question again, please?

Q (BY MS. SPAGNOLI): All right. Test No. 5789 from January of 1996 is a test that you requested, right?

A Yes, ma'am.

Q Okay. It has -- it is a 1996 production ZJ modified to represent the 1997; is that right?

A Yeah, it was modified with the new fuel sending unit and fuel tank design.

Q Okay. So the only difference between the '96 production vehicle that you tested that was modified to represent the '97 was that it had the fuel sending unit and fuel tank that was being intended for the '97 model, correct?

MS. FOGEL: Object to the form.

THE WITNESS: The differences noted here are only the fuel sending unit and fuel tank design.

Q (BY MS. SPAGNOLI): So in all other respects, this vehicle was a production 1996 ZJ, correct?

A The only differences noted were the fuel tank and fuel tank design on this test letter.

Q All right. This test had a leak in excess of the allowable limits in the engine compartment area during the post test static rollover. Do you see that?

A Just a second. The Post Test Fuel System

Observations, handwritten, I can't read it, but on the Electronic Test Letter there indicates that there were no fuel leaks at impact or in the 25 minutes after impact, but there was fuel leakage in excess of the allowable limits in the engine compartment during the post-test static rollover.

Q Okay. Do you know what the source of the leak from the engine compartment was in this test?

A I don't remember this one.
Q At all?
A No.
Q Would a leak in the engine compartment be a violation of the test requirement?
A Yes, ma'am.
Q Was there anything different in the engine compartment in the '96 production ZJ vehicle that was tested in this test? I'm sorry, let me restate my question.

The engine compartment of the vehicle tested was a production 1996 ZJ, correct?
A It was a 1996 production ZJ.
Q And so you had a failure in the engine compartment which was a production engine compartment, correct?
A It would appear to me that that is true. The only other thing that I wanted to say is when the first

of these style of tests came, the original description was for a new steel fuel rail, the matching line bundle, and then that description falls off and isn't repeated, and I don't recall whether that should have been repeated and carried forward or was just implicit in the fuel tank and sending unit design, so I can't say for certain whether it was exactly a '96 production fuel system in the engine compartment.

Q Are you guessing?
A I think that the way I used to do things would have implied that the changes went with this fuel tank and sending unit, but I can't be sure.
Q Well, sir, you agree with me that the build condition is supposed to represent the actual condition of the vehicle that you tested including any differences from a production vehicle, correct?
A Yes, ma'am.
Q And you would agree with me that test 5789 does not indicate any production changes in the test vehicle from a 1996 production ZJ with respect to the engine compartment, correct?
A No, it doesn't indicate that explicitly.
Q Okay. And this test, because of the leak in the fuel system in the engine compartment, this is a

failure of the government standard, correct?
A Yes, it is.
Q Was this test reported to the government?
A No, it was not as far as I remember.
Q The dynamic crush on this test is 20 inches, if I'm looking at page 2050, correct?
A Yes, dynamic crush on this one was 20.0 at 30 miles an hour.
Q Okay. Now, if you have a production vehicle that is

involved in a test that fails the government standard, you have a requirement to report it to the government, do you not?

A I don't remember. I don't think so.

Q You don't think Chrysler has to report failures of production vehicles in 301 compliance tests?

A I don't believe this was a compliance test.

Q It was a test on a production vehicle that failed the government standard 301 test, correct?

MS. FOGEL: Objection to the form.

THE WITNESS: It was a production vehicle with 1997 fuel system and fuel tank design at the minimum change to represent '97 production intent.

Q (BY MS. SPAGNOLI): Right. And you would agree with me that the fuel tank and fuel sending unit were not the reason for the failure on this test, correct?

MS. FOGEL: Objection to the form.

THE WITNESS: They're not in the engine compartment which the only note here says that's where the leak occurred.

Q (BY MS. SPAGNOLI): Right. And if this was a production vehicle with a production engine that failed a 301 barrier test and failed the government standard, you're telling me you don't know whether or not that is a test that needs to be reported to the government?

A The engine itself was likely to be production. What I am unsure of is whether when we changed the fuel sending unit and the fuel tank design if we didn't take with that fuel system change the whole fuel system as described previously, so I can't say exactly whether or not it should have been reported. I don't believe that it was reported.

Q Well, if it was not -- if it was a vehicle that was production in all senses with respect to the engine compartment and there was a failure, meaning it did not comply with the government standard, would that require you to report the test to the government?

MS. FOGEL: Objection to form. You can answer.

THE WITNESS: I don't know right now as I

sit here whether that's the way that works out.

Q (BY MS. SPAGNOLI): Okay.

A I don't remember the intricacies.

Q And by suggesting that maybe there were some changes in this vehicle that are not reflected on the build condition, is that a means for you to justify not reporting this test to the government?

A The changes that are written on the build condition, I think, would have been shorthand for changing the fuel system. Whether or not they're justification,

I don't remember this failure mode and I don't remember the occurrence at that time, so exactly what it was that went through our mind as to whether we justified not calling or calling our Safety Office to report it, I can't say.

Q Well, certainly someone would have had to discuss this test and the fact that you failed the government standard, correct?

A This test did fail the government standard.

Q And rather than just passing by this test, people would have had to have talked about it, right?

A Yes.

Q And would have had to justify what to do in response to the failure of this '96 production ZJ with a new fuel tank and sending unit not being required to

report the result to the government, right?

MS. FOGEL: Objection to the form. You can answer.

THE WITNESS: There was almost certainly some discussion about this test and its failure. I don't remember specifically why this one failed. As I've sat here -- and I'm trying to look through the photographs to see if this is the specific test in my memory that there was a fuel rail contact with body-in-white at the plenum area. I can't say whether that was this one or another one. In the

photographs I had hoped to see a picture of it, but I don't, and so I can't recall the exact mechanism as to why this one leaked in the engine compartment.

MS. FOGEL: I don't have a copy of the exhibit. Does that include the Fuel System and Static Rollover Summary?

MS. SPAGNOLI: Absolutely.

THE WITNESS: Yeah, it does.

Q (BY MS. SPAGNOLI): So was this occurrence a failure of a government standard on a production vehicle a common occurrence?

MS. FOGEL: Objection to the form.

THE WITNESS: No. The production vehicles did not fail the government standard. This failure

is unusual and it was noted as an unusual failure in the post-test letter.

Q (BY MS. SPAGNOLI): And what was done about it is something that just does not register in your brain at this point in time; is that what you're saying?

MS. FOGEL: Objection to the form.

THE WITNESS: There was a change to the plenum to allow more space for a fuel rail to translate rearward in the car. I can't recall whether this vehicle was the one that had this change in it or caused that change. I remember

having the fuel rail in our vehicles contact the plenum area and changing the body-in-white to prevent that, but whether it was this test or another, I'm not sure.

Q (BY MS. SPAGNOLI): But with respect to this specific test, you cannot explain what, if anything, was done with respect to a decision about whether this test required a report to the government; is that right?

MS. FOGEL: Objection to the form.

THE WITNESS: With respect to this specific test, I don't recall the decision or the discussion around the decision as to why we did or didn't call the Safety Office and our government reporting. I

don't remember.

Q (BY MS. SPAGNOLI): Can I ask you to take a look at Exhibit 17, please.

MS. FOGEL: I have it right here.

Q (BY MS. SPAGNOLI): This is test 5854, a 1997 301 development test on a 1996 production ZJ modified to represent the 1997, correct?

A Yes, it's a modified 1996.

Q And it's a test from March of 1996, correct?

A Yes, it is.

Q This is a test that you requested, correct?

A Just a second. Yes, it is.

Q And there is a 1997 fuel sending unit, a 1997 fuel tank design in this vehicle, as well, similar to the last vehicle, correct?
A It has the same description as the previous test 5789.
Q Is this a test that you were shown yesterday or the day before?
A It should have been but I don't remember it specifically.
Q I don't see it on the list that was read to me.
MS. SPAGNOLI: Perhaps counsel could confirm whether 5854, any portion of that test was shown to the witness the day before yesterday.

MS. FOGEL: This is one of the tests for 1997, and I believe it was.
MS. SPAGNOLI: Okay. When you read me the list, I asked you to tell me the numbers of the tests that you showed the witness, and I have 5339, 5380, 5441, 5493, 5890, 5993, 5681, 5789, 5890, 5926 and 5967.
MS. FOGEL: And before that I told you I showed him the ones for '96 and '97.
MS. SPAGNOLI: And then I asked you to tell me specifically which ones they were --
MS. FOGEL: That's correct.

MS. SPAGNOLI: -- and that's the list that you read me that I've just read back.

MS. FOGEL: Well, I'm going to rely on what you're representing to me, because I don't have a copy of the transcript yet, and if I missed one when I read the list, then so be it, but I believe as I sit here now -- and you've asked me. I told you that I showed him all the '97's, and if that's a '97, then I believe that's one of the ones I showed him.

MS. SPAGNOLI: Okay. And you would have showed him, again, the safety test letter and the test request; is that right?

MS. FOGEL: That's correct.

MS. SPAGNOLI: Okay.

Q (BY MS. SPAGNOLI): Again, in connection with the build condition of the vehicle that was tested in test 5854, was this in all respects a production 1996 ZJ with the exception of the fuel sending unit and the fuel tank?

A That's the build condition as written on this test letter.

Q Okay. And this test had a fuel leakage at impact in excess of the allowable limits, correct?

A Yeah. That is the description here. The post-test letter describes it as greater than five ounces at

impact.
Q And what page are you reading from, 4453?
A 4453. There is something written up there, but I cannot read it and cannot find it typed in.
Q Okay. It says "Fuel at impact. Leakage exceeded allowable limit," I believe. Does that look like what it says?
A That, I would be guessing at, but it's something close. I can't tell really.
Q Okay. There's no description of where the leak occurred in this test, correct?
A No, there isn't.

Q It's a leak that occurred at impact of greater than five ounces, correct?
A That's what it indicates, yes, ma'am.
Q Do you know why this test vehicle leaked?
A I don't remember at the moment.
Q Okay. What is the dynamic crush in this test?
A Here's our dynamic crush of 20.3 inches.
Q Okay. Was the failure of this test reported to the government?
A No.
Q Do you know why?
A It was a 1996 production vehicle to be modified with '97 production intent parts. So it was a test of

preproduction parts.

Q And the only preproduction parts were the tank and the fuel sending unit, correct?

MS. FOGEL: Objection to the form. That's not what the document says.

THE WITNESS: The description says that.

Q (BY MS. SPAGNOLI): Right?

A The description says 1997 fuel sending unit and fuel tank design.

Q And you don't know whether the failure occurred in the preproduction parts or the production parts, correct?

A They are not clear as to where the failure occurs.

Q Okay. So you cannot answer my question; is that right?

A Which question was that?

Q You don't know whether the failure occurred in the preproduction parts or the production parts; am I correct?

MS. FOGEL: Objection to the form.

THE WITNESS: I don't know where the failure occurred.

Q (BY MS. SPAGNOLI): Okay. Let's look at Exhibit 18, test 5890.

MS. SPAGNOLI: It's actually the little skinny one.

MS. FOGEL: That's this one here.
THE WITNESS: Thanks.
Q (BY MS. SPAGNOLI): This is an April 22, 1996 test of a 1996 production ZJ modified to represent a 1997; am I correct?
A Exhibit 18 is a 1996 production vehicle with modifications to the fuel tank, sending unit and fuel tank design to represent the '97 intent.
Q Okay. This, again, refers to the fuel sending unit and the new '97 fuel tank design, correct?
A Yes.

Q It also references a trailer hitch single side bracket on left rear. Is that the first time that we've seen a test with this reinforcement bracket?
A Yes, to my knowledge, that's the first time I've included that description in the test build condition.
Q Okay. And what -- what was the result of this test?
A Post Test Remarks state "There were no fuel leaks at impact [and] fuel system integrity was maintained."
Q Okay. Is there any note with respect to whether there was contact between the fuel tank or fuel lines and any components within the rear of the vehicle?
A I don't appear to have the handwritten set of notes

and all I can find for the notes are the written -- typed-in text of the post-test letter, and the only indication there is that it passed the test.

Q Okay. But, again, given your observations and experience in testing Grand Cherokees, you would have expected that there would be contact between the tank and the axle at least in the test; is that right?

A Yeah, I would have expected the tank and axle to contact.

Q Okay. Is there any other location where you would

have expected contact between the tank or components of the tank and the vehicle?

A The rear bumper contacts the inside of the -- or the forward face of the rear bumper contacts the gas tank.

Q Okay. Any other areas that you expected contact?

A No, not particularly, as I recall.

Q Okay. Let me ask you to take a look at Exhibit 19.

A Which one is 19?

Q This is test 5926, dated May 9, 1996. It's a 1996 production ZJ modified to represent 1997. Do you see that?

A Yes, ma'am.

Q And this has a '97 fuel sending unit and fuel tank design, correct?

A It's described as having a 1997 fuel sending unit and 1997 fuel tank design, yes.
Q And it has a skid plate, correct?
A Skid plate only, no trailer hitch bracket.
Q Okay. When it says "Skid plate only, no trailer hitch bracket," is there some mechanism of attachment of the skid plate that substitutes for the frame rail reinforcement bracket?
A The skid plate is attached to the rear body-in-white in the same structural area. I don't recall whether

it uses the exact same bolt holes or not but it goes in the same spot, so -- did that answer the question?
Q Well, is the skid plate attachment meant to provide the same reinforcement of the left frame rail as the reinforcement bracket or the trailer hitch attachment?
A The skid plate here, when we were testing it, we wanted to make certain that it performed the same way as the reinforcing bracket, so we wanted to see if the skid plate -- because you can order a car with skid plate only, and the idea was do we have to add the bracket and the skid plate or is the skid plate going to perform as well as the bracket did.
Q And what did you decide?

A Well, this one passed the test and the skid plate performed as well as the bracket in these tests.
Q And when you refer to a skid plate, what is a skid plate?
A A skid plate is a large stamped metal, a basket container, for lack of a better word, that covers the entire gas tank and mounts up to the frame to prevent the gas tank from getting damaged in off-road maneuvers is its main intent, but it forms a large metal shield to prevent all kinds of damage

on the gas tank, primarily when it skids off and over some under-vehicle object.
Q So the skid plate, you said, is a large metal shield that prevents all kinds of damage occurring to the gas tank; is that right?
A Yes, it prevents a variety of damage to the tank.
Q Okay. Can you -- look at the mechanical request for the -- this crash test vehicle. Do you see where it says "No Stoddard added at JTE fuel tank empty?"
A Yes, ma'am.
Q Does that mean the test was run without any Stoddard in the tank?
A No, ma'am.
Q What does that mean?
A That means that we shipped the vehicle from Jeep/Truck and Engineering facility to Chelsea

without any of the Stoddard solvent in it.
Q Okay. And so you put the Stoddard in when it arrived at the test facility?
A Yeah, and that should be noted in that summary by the proving grounds guys because they're the ones who put the Stoddard solvent in it.
Q Okay.
A Yeah, and here on your page 3177, it -- fuel type and quantity, specific gravity, Stoddard solvent --

COURT REPORTER: I'm sorry.
THE WITNESS: Specific gravity, that's a description of the Stoddard solvent, type, and then it says right there they had 21.5 gallons into car.
Q (BY MS. SPAGNOLI): What was the speed that -- the actual test speed of this test?
A This test speed was 30.1 miles an hour.
Q So it was fairly -- it was just above the 30 mile an hour limit?
A Yes, one-tenth of a mile above the limit.
Q Okay. And the dynamic crush on this vehicle -- I'm looking at page 3209 -- is 18.1 inches; is that right?
A Yes, it is.
Q And that's the lowest one we've seen, right?
A Yes.

Q And is this the only test that we've seen that actually had a skid plate attached?
A So far, it's the only one with a skid plate.
Q Okay. Was there contact between the skid plate and the differential in this case?
A I don't recall.
Q Are there photographs that show the underside of the vehicle here?
A There are photographs.

Q If we look at page 3221, do we actually see the skid plate next to the differential?
A Just a second. Yeah, it is next to it. I'm not sure what that large black line indicates, but, yeah, it's right there next to it. You can see targets U7 and U10 are on the skid plate and target U6 is on the differential.
Q Can you hold that up for the camera and then just point out what you mean by the target.
A This one is U10, this one is U7. There's a black line, and then this one here is U6, and that's the differential area here.
Q Okay. So that large white area, sort of lighter appearing area is the shield that covers the gas tank; is that right?
A Yes, ma'am. This is the photograph of the skid plate post test.

Q Okay. And does the shield also cover the front end of the tank so that in this case the tank is not contacting the differential; it's the shield that's contacting the differential?

MS. FOGEL: Objection, form. You can answer.

THE WITNESS: I know what you're asking me and I don't remember whether it goes up there or

not. I don't remember.

Q (BY MS. SPAGNOLI): Okay. Next let's look at test 5927. This is a 5-9-96 test and I've marked it as Exhibit 20. This is a 1996 production ZJ modified to represent the 1997, right?

A Yep, it's a 1996 production ZJ with modifications to represent '97 design intent.

Q Okay. And the changes again here are we have the '97 fuel sending unit and fuel tank, correct?

A Yes.

Q And here we have a full trailer hitch with no skid plate and no bracket, right?

A That's the description.

Q Okay. And the trailer hitch, as we discussed, attaches to the left frame rail similar to where the skid plate attaches, correct?

A I believe it attaches in the same area of the

vehicle, but like I said before, I'm not certain if it uses the exact same attachment points.
Q At any rate, if you have the trailer hitch, did you believe that you would have the similar reinforcement in the left frame rail as you would get with the actual reinforcing bracket? Is that what you were testing?
A Yes, it's very similar. The reinforcing bracket is,

in fact, that one-third of the trailer hitch. We simply didn't assemble the whole trailer hitch from the same stamping. That part is part of the trailer hitch.
Q Okay. And can you tell me if you have any photographs that would depict the underside where the tank and the differential would be depicted in the crash test, post-crash condition?
A I haven't seen these pictures in ten years. I think photograph 3314 is post test, but there -- it would have been their habit to put the little tiny word "post" on a sticker and I don't see that there. I do see it on 3317 --
Q Right.
A -- but it's not exactly the differential. It's sort of sticking out of the corner.
Q You actually, if you look at photograph that is --
A Which one?

Q -- 33 -- hold on one second. There was one -- 3309 looks like pre-impact the gas tank --
A That was a pre, yeah.
Q -- and the differential, right?
A Just a second -- 3309, I got it. 3309 appears to be a pre-test photograph.
Q Could you hold that up and just show us what --

where the edge of the gas tank is and then where the edge of the differential is.
A So here is the gas tank edge and this outline here is the differential edge, so they're separated by this right here.
Q Okay. Now, it looks to me like there's something in between the two. Is that the stabilizer bar?
A I don't know if that's the track bar there or not. It should be, but it's hard to tell. I can't see what it's connected to on each side. I think it's the track bar, but it's in the right spot but the angle looks funny to me, you know, because the track bar typically goes over the top of the axle and there it doesn't look like it's on top, so that's why.
Q So we're looking at it from underneath looking up, so it may actually be above the axle, but it just looks like it's in between the tank and the

differential in this picture?

MS. FOGEL: Objection to form.

THE WITNESS: This perspective is unusual.

Q (BY MS. SPAGNOLI): Okay.

A It doesn't appear to be in -- where it should be for a production car.

Q Okay. So from -- with respect to the -- you call it

a track bar. Is that the same as a stabilizer bar?

A The track bar bracket is what connects the axle to the body, and this appears to be -- to me to be the track bar bracket. As far as I know, there isn't anything called a stabilizer bar.

Q Okay. In the track -- in the production condition, is the track bar bracket in between the tank and the differential or is it above it?

A The bracket, the track bar bracket, as you stated, is welded to the axle and should be on top of the axle tube and not between the gas tank and the differential.

Q Okay. So in a production vehicle, there would be -- there would be space, clearance between the front of the tank and the differential and not anything in between those two components; is that right?

MS. FOGEL: Objection to form. You can answer.

THE WITNESS: Let me make sure I understood

your question. There should be space between the gas tank and the differential and the track bar --

Q (BY MS. SPAGNOLI): Right.

A -- in production?

Q Right. So specifically there would not be a component or part between the tank and the

differential in production; is that right?

A There shouldn't be, but I'm not recalling if there is anything else there. We talked a little bit about the skid plate and I don't recall whether it slips up in that area or not.

Q Okay.

A And that --

Q Right. But if you have a vehicle like this one that doesn't have a skid plate and we look at 3314 -- can you flip to that page again.

A Yes.

Q This does appear then from the condition to be a post-impact photograph, correct?

A Yeah, it looks like a post-impact photograph. Like I said, there's -- there should have been a little word. If you notice on other photographs, they have like a magnet or something written "post" on it, but next to the test No. 5927, see, there's something indescribably written there and that should say

"post."

Q Okay.

A But --

Q Can you again hold up that picture and just show us the edge of the tank and the edge of the differential.

A So here's -- the tank is this white unit here and it's separated here by this black line, and then this is the differential, this white part here.

Q And does it looks like the tank is actually in contact with the differential in that picture?

A It's difficult to judge. There's a black line in there, but whether that's contact or a shadow or what, I -- I would have presumed, to my knowledge, that the tank would be in contact with the differential. Whether it is or not in this photograph, but whether it touched it or not, that should have been the normal way it runs.

Q Okay. Thank you. Do we have the dynamic crush measurement for that test?

A Oh, I don't know.

Q 5927. I thought I had it, but -- try page 3302. It looks to me like it says 19.6.

A Yeah, this one reports a dynamic crush at 19.6 for 30.1 miles an hour.

Q Okay. And did we have the dynamic crush for the

5967? I think you have that test report there. This is the one that you used for compliance, and it was with the reinforcement bracket but not -- no trailer hitch or skid plate.

A It's not here.

Q There it is.

A Oh, right here. What was the question about 5867?

Q I'm going to ask you if you can locate for me the dynamic crush for 5967, the compliance test.

A Dynamic crush.

Q And, again, just to verify, the vehicle, 5967, is a -- is equipped with the reinforcement bracket but not the skid plate or the trailer hitch.

A Yeah, vehicle 5967 with the trailer hitch bracket added after the PO build, the configuration represented 1997 V-1, which is production intent, had a dynamic truck of 19.9 inches with a speed of 30.1.

Q Okay. So this is the test that was used to certify compliance, correct?

A Yes, it was, in 1997, vehicle crash No. 5967, certified the rear impact for the ZJ.

Q Okay. So the certification vehicle was actually the vehicle that had the trailer hitch bracket as opposed to the reinforcing bracket or the skid

plate, correct?
A The certification vehicle had only the trailer hitch bracket and not the skid plate and not the complete trailer hitch.
Q Is the trailer hitch -- this is where you're not

sure if the trailer hitch bracket resembles or is the same as the reinforcement bracket; is that right?
A Oh, no, no. The trailer hitch bracket is the exact same part of the trailer hitch without the rest of it.
Q Okay.
A The trailer hitch bracket and the reinforcing bracket are the same.
Q Okay. So the vehicle that was certified as being in compliance basically had the reinforcing bracket?
A The vehicle 5967 had the trailer hitch reinforcing bracket.
Q Okay. And the test before that, 5927, had the trailer hitch as well as the trailer hitch reinforcing bracket, correct?
A The 5927 build condition is the full trailer hitch which doesn't have an extra bracket.
Q Right.
A It is the bracket itself which includes then the cross piece and the same bracket in a mirror on the

right side, so it only had the one bracket just like the compliance car did but it had in addition to it welded to it the cross piece and the other right-hand side, so there's only still the one

bracket. It's just got the added trailer hitch parts.

Q Okay.

A So there's only the one bracket on that one side.

Q I understand. I think we're talking about the same thing, but --

A Okay.

Q -- 5927 --

A Yes.

Q -- has the left side frame rail bracket --

A Yep.

Q -- plus a cross member that goes outside the bumper plus a bracket on the right frame rail?

A That's the complete trailer hitch, yes.

Q Okay. And that's what was tested in 5927, right?

A Yes.

Q 5926 has the skid plate?

A 5967, ma'am?

Q 5926, the one before that, the one that had the skid plate.

A Right, okay, 5926.

Q The skid plate would have the left side reinforcement bracket, correct?
A No. The 5926 had skid plate only, no bracket.
Q Right. But it has an attachment to the left side

frame rail that attaches in the same location and performs the same function?
A The skid plate is attached at, I think -- I think it's attached to the same spot the brackets go, but the skid plate then is there in place of the bracket.
Q Understood. But in terms of how it attaches, the skid plate --
A Yeah.
Q -- does the skid plate attach in the same location on the left side frame rail and the right side frame rail as a trailer hitch would attach?
A That, I'm not sure about. There were a couple of holes there, and I don't remember whether the trailer hitch and the bracket and the skid plate all used the same holes or not, so I can't remember. I don't remember.
Q But when you say the skid plate is meant to be instead of the reinforcing bracket, there's some component of how the skid plate attaches that serves the same function as the reinforcing bracket?
A The skid plate and the bracket both have the

23 physical geometry of a right angle flange which has
24 a lot of load-carrying capability, and they both
25 bridge the pass-through hole for the fill and vent

1 lines where they go through the rail, and they both
2 bridge that same spot with the same geometry, but
3 I'm not sure whether they attach in the same spots.
4 Q Okay. But the function as far as the -- managing
5 the energy is, in your opinion, equivalent --
6 A Yeah. Well, that's why we ran the test --
7 Q -- to the bracket?
8 A -- to prove that it was equivalent, uh-huh.
9 Q Okay.
10 A We thought it was and so, you know, we ran the test
11 to be sure.
12 Q Okay.
13 MS. SPAGNOLI: Let's go off the record. I
14 want to make sure I'm done. I think I am close, but
15 I want to just look at my notes.
16 VIDEO TECHNICIAN: Going off the record at
17 11:35 a.m.
18 (Off the record.)
19 VIDEO TECHNICIAN: We're back on the record
20 at 11:50 a.m.
21 Q (BY MS. SPAGNOLI): Okay. Mr. Estes, just a few
22 follow-up questions. One of the things we talked

about earlier was Stoddard solvent, and I'm not sure the jury knows what that means or what it is. What is Stoddard solvent?

A Stoddard solvent is a gasoline substitute that we use to have higher degree of safety for the crash test personnel. It has the same specific gravity which means it weighs the same per volume as gasoline and it has extraordinarily similar fluid qualities, and it's a standard substitute for volatile gasoline in crash tests.
Q Is Stoddard solvent also red?
A There are different colored dyes that you can get introduced to it. I don't recall it being particularly red, but --
Q But there is some kind of a dye so that you can see stains after a crash test?
A We have a dye; it's a tracer that allows it to be seen in ultraviolet light, and you can wave the ultraviolet light around and see the -- if there was any leakage in a small amount of -- it's very brightly covered under ultraviolet light, but it doesn't exactly change its color to the human eye as I recall.
Q I guess my question would be if you had Stoddard solvent and a leak in a crash test, would the leaked solvent be visible to the eye after the impact test?

A Not always, no. I don't always see it after the test.

Q Do you know what -- would it look a different color? Would it be a darker color or -- I mean, is your solvent that Chrysler uses a red color?
A It looks an awful lot like gasoline. It's sort of a pinky. You know, if you look at gasoline, it's not exactly red. Like this is very much golden but the gasoline is sort of a rose water colored. It's not like bright red, like pink.
Q Right. But it's got a tint to it?
A Well, yeah.
Q A rose-colored tint?
A As I recall, it's sort of a very light rosy pink.
Q Okay. And when you have a leak in a test, you would see traces of it and you could see it better if you put ultraviolet light up to it?
A Yeah, you could see traces of it sometimes, depending on what it's on, you know. It's like any somewhat clear liquid on things. Sometimes it will wet them, sometimes it will just be little spots, depending on what it lands on.
Q Okay. And do you -- you also use an ultraviolet light to try and see if there's been a leak and it would leave a trace?

24 A There have been occasions when we have used
25 ultraviolet light to look to see stuff before we

1 took it apart. Often you can't see where the leak
2 is if there is a leak in a development test. These
3 are all squashed together and you can't tell where
4 it comes from and you try to use that as a trace.
5 Q Okay. Can you look at Exhibit 15. This was crash
6 test 5681, and it's one where there was a leak that
7 was not noted with respect to the source of the
8 leak.
9 A 5681, yes, ma'am.
10 Q Okay. Do you remember this? We discussed this test
11 and you pointed out a photograph that showed the
12 valve on top of the tank. I'm not sure, is this the
13 vent valve or the --
14 A In 5681?
15 Q -- filler? Yeah, page 3163. This was the
16 photograph that you pointed out.
17 A If this is the test that I remember, and this
18 photograph seems to indicate this, this is a pretty
19 obvious hole.
20 Q Well, sir, can you look at 3163, that photograph.
21 A Yes, ma'am, I am.
22 Q That's the one we're looking at, right?
23 A Yes.
24 Q And what is the valve that we're looking at there?

Which one is it?

A This is -- the whole piece here is the top of the fuel -- view -- fuel -- pardon me, the fuel sending unit. This is the electric pump and sending unit top.

Q All right. Now, is there any visible Stoddard solvent in this picture?

A No, not in this picture.

Q Okay. All right. Now, let me change subjects and go back to the test that occurred with the trailer hitch bracket or the skid plate. 5890, could you pull out that exhibit. It is test -- it's Exhibit 18, and 19 and 20 are the ones I'm going to ask you about, or actually exhibit -- yeah.

A Pardon me. Which one now?

Q I want you to look at Exhibit 18, 19, and 20.

A Okay.

Q Whoops. I take that back. I want you to look at 18, 9 and 20. Nine is the actual compliance report, the one that certified the 1997 vehicle as being in compliance with the standard. Okay? I want to just have those side by side.

A I have 9, 18 and 20. Is that what you're looking for?

Q Right. Nine is the one -- 5967, test that is the

one that you used to certify compliance, right?

A Yep.
Q And as we discussed, it had the trailer hitch bracket and it had dynamic crush of 19.9 inches, right?
A Just a minute. Yep, 19.9 inches is the dynamic crush of 5967.
Q And then test 5890, which was Exhibit 18, was also a vehicle that had the trailer hitch bracket, not the full trailer hitch but just the bracket, correct?
A Yes.
Q And it had a dynamic crush of 20.4 inches, correct?
A Yes, vehicle crash test 5890 had a dynamic crush of 20.4 inches.
Q Okay. So the two vehicles that only had the bracket had dynamic crush in the rear impact test of 19.9 and 20.4 inches, correct?
A Yes.
Q Okay. Now, if you look at Exhibit 19, which is the test 5926, this is the test that had the skid plate attached, correct?
A Just a second. I don't have 19. Twenty, nine -- Exhibit 19 -- skid plate on 5926. What was the question?
Q You've got that test and it only had the skid plate? It had the skid plate instead of the trailer hitch

bracket, correct?
A 5926 had a skid plate and no trailer hitch bracket.
Q Right. And this was also -- so that's the difference in the structure between the two tests that we've just looked at and the test with the skid plate, correct?
A Yes, I believe that is the primary difference. There are some other things listed on some of the vehicles, but that's the difference, I think, in the area we're talking about.
Q Okay. And the dynamic crush in the test that had the skid plate instead of the trailer hitch bracket was 18.1 inches, correct?
A Yep.
Q Okay. And using those numbers from these three tests then, would you agree with me that the vehicle -- the Grand Cherokee that had the skid plate compared to the vehicles that had the trailer hitch bracket, that there was a more than a 10 percent difference between the dynamic crush in the vehicles that only had the trailer hitch versus the one that had the skid plate?
A Is there a 10 percent --
Q And I meant to say the trailer hitch bracket versus the vehicle that had the skid plate.

A In the two tests that I have here, 5890 and 5967, the differences are 1.8 inches total, and so that's not quite 10 percent, but they are -- that difference between the smallest crush, 19.9 and 18.1, when you look at that difference, half of it could be accounted for in the error of resolution, because they're both plus or minus.

COURT REPORTER: I'm sorry.

THE WITNESS: Error in resolution. Both of them are plus or minus one inch, but the difference between the two, as anyone with arithmetic will tell you, is 1.8 difference -- 1.8 inches at the noted dynamic crush between 5926 and 5967 --

Q (BY MS. SPAGNOLI): Right.

A -- for two different build conditions.

Q Right. Well, they're the same build conditions, but one has the hitch bracket and the other has the skid plate? That's the difference?

A Yes, that's the difference in the build, yes.

Q Okay. And test 5890, which also had the hitch bracket, had more than a 10 percent difference in dynamic crush; in other words -- let me restate my question.

5890, which was the other test with the trailer hitch bracket instead of the skid plate, had

more than two inches of dynamic crush than the test that had only -- that had the skid plate, correct?

A Yes, the dynamic crush between vehicle crash test No. 5926 and 5890 is 2.3 inches.

Q Okay. Which would be more than 10 percent?

A Yeah; it's about 11.

Q Okay.

MS. SPAGNOLI: All right. Thank you. That's all the questions I have.

EXAMINATION

BY MS. FOGEL:

Q Mr. Estes, I have a few follow-up questions for you. I'd like you to take a look, please, at Exhibit 16, which is the vehicle crash test 5789.

A Yes.

Q Okay. Is that a development test?

A Yes.

Q Okay. And is that a development test where the build condition indicates 1996 production ZJ modified to represent 1997?

MS. SPAGNOLI: I'm going to object to the form of the question. It's leading.

THE WITNESS: The Vehicle Crash Test Letter describes VC5789 as a 1996 production ZJ modified to represent 1997.

Q (BY MS. FOGEL): And could you tell me at the bottom of the build condition, the last line there, what does that say?
A "1997 fuel sending unit and 1997 fuel tank design."
Q Okay. Does the 1997 fuel tank design also include fuel rails?
A The fuel tank design and the fuel sending unit, I think, includes the fuel rails and the fuel lines that connect the rails to the tank.
Q Do fuel rails go to the engine of the vehicle?
A Yes, they do.
Q Okay. Could you please turn to the Fuel System and Static Rollover Summary page, VI-1.
MS. SPAGNOLI: What's the Bates number on that?
THE WITNESS: Is there a DC number?
MS. FOGEL: This doesn't have a Bates number on it. I'm sorry. I have a copy of the exhibit I would be glad to show you.
MS. SPAGNOLI: Okay. I'll look for it. I think I have it. It's 2006.
THE WITNESS: Oh, boy, yeah, I see 2006.
Q (BY MS. FOGEL): Can you read for us where it says Under Post Test Fuel System Observations, No. 3? I know it's not a very poor photocopy.

MS. SPAGNOLI: It's not readable at all.
THE WITNESS: It starts out, it says "No" -- and then I believe the next word is "fuel." On this page, it's very unreadable, but if you'll turn to 2008, there are Post Test Remarks that are typed.
Q (BY MS. FOGEL): Okay. I'd like you -- do you know what I'm going to do? I'll have this marked as the next exhibit, because perhaps this is a better photocopy that I have, so whatever number we're up to, I'll have that marked.
MS. SPAGNOLI: Can I see it?
MS. FOGEL: Oh, certainly. I'll have that marked as Estes -- what are we up to, 21?
MS. SPAGNOLI: Yeah, it's 21.
Q (BY MS. FOGEL): And I'd like you to just -- to the extent that you're able to, read underneath the Post Test Fuel System Observation section, No. 3, please.
MS. SPAGNOLI: Well, maybe he can read the whole thing, if we can read it.
MS. FOGEL: Yeah, I can, if you can't.
MS. SPAGNOLI: Well, let's see if he can.
MS. FOGEL: Okay.
THE WITNESS: It says, "No fuel leaks at impact. Post test" --

Q (BY MS. FOGEL): If you can read the part that's No. 3.
A No. 3, I think it says, "Slow leak (after roll) when pressure tested is connected to fuel rail (at Schrader valve)," I believe is what it says on No. 3.
Q Okay. Does that indicate to you the area of the source of the leak in the engine compartment in vehicle test 5789?
A Yes, it does.
MS. SPAGNOLI: Object to the form. It's leading.
THE WITNESS: This comment here, with the slow leak at the Schrader valve, indicates quite precisely where the fuel leak is on VC5789.
Q (BY MS. FOGEL): And what is the source of that leak that is indicated quite precisely?
A The Schrader valve, which is a small pressure-relief valve, very similar to a tire valve, on the -- on the fuel rail.
Q Okay. And was that fuel rail part of the 1997 fuel tank design as referenced in the build condition --
MS. SPAGNOLI: Object to the form of the question.
Q (BY MS. FOGEL): -- on that Vehicle Crash Test

Letter 5789?

MS. SPAGNOLI: Object to the form of the question, leading.

THE WITNESS: I think that the fuel tank system included with the rails, the fuel lines, as was initially described in the previous test and now was shortened to just those two words --

COURT REPORTER: Was --

THE WITNESS: Was shortened to just those descriptions, which would have included the rail and the metal lines, and the rail would have included this Schrader valve.

Q (BY MS. FOGEL): And, again, was VC5789 a development test or something else?

A VC5789 is a development test.

Q If there was a failure in the 1997 fuel tank design in this modified 1996 production ZJ, would DaimlerChrysler have alerted the government to that?

A No, we would not have. It was testing before production.

Q Okay.

MS. FOGEL: I have no further questions.

EXAMINATION

BY MS. SPAGNOLI:

Q Sir, let's look at test report 5441, Exhibit 14.

This is a report that --
A Does it have a number?
Q Exhibit 14.
A Okay.
Q Specifies on the bottom under build condition, "1996 co-extruded fuel tank with reinforced sending unit cover," right?
A Yes, ma'am.
Q And it separately states, "1996 steel fuel rails and matching line bundle," correct?
A Yes, ma'am.
Q And it doesn't refer to a Schrader valve, does it?
A No, it doesn't. The Schrader valve is integral to the build of the fuel rail.
Q Right. And the Schrader valve -- there was a Schreuder valve and a fuel line in the 1994 production built ZJ Grand Cherokee, right?
A I don't know that for sure.
Q There was a fuel rail and a Schrader valve in the 1995 production built ZJ, wasn't there?
MS. FOGEL: Objection to the form. You can answer.
THE WITNESS: I can't be certain.
Q (BY MS. SPAGNOLI): There was a fuel line, a fuel rail and a Schrader valve in the 1996 production

built ZJ, correct?
A I don't know.
Q You don't know?
A I don't know if there was a Schrader valve on the fuel rail before these changes came in.
Q Okay. So when you refer to a 1996 production ZJ, you don't know if it had a Schrader valve in the 1996 production vehicle; is that right?
A In the 1996 production vehicles there is no knowledge that I have of what the rail was or wasn't, whether it had a Schrader valve in it or didn't.
Q Okay. And in the test that you -- the description of the test that you have for the test 5789, you do not have a description of a different fuel rail or line bundle from production -- from the production vehicle; is that right?
A No, the description in 5789 indicates only fuel sending unit and fuel tank design, which, as I believe, is inclusive of this whole package of the new fuel system that we were trying to put in.
Q Well, I know that you are saying that --
A But it does not say it.
Q -- because you're trying to explain why you would have called out in one test report a different fuel

rail and line whereas in the report 5789 you don't call that out. That's what you're trying to explain to us, right --

MS. FOGEL: Objection.

Q (BY MS. SPAGNOLI): -- why you would have done it in one and not the other?

MS. FOGEL: Objection to the form. You can answer.

THE WITNESS: When we write a test request like this, we would normally have had, when the first change comes in, a large description of it, and then that change will get shortened as you go forward. I believe that's what happened here.

Q (BY MS. SPAGNOLI): Well, isn't it what happened here is that the test report dated April 12, 1995, 5441, actually contained the parts that were going to be implemented in the 1996 production vehicle and it predates your certification of compliance of the 1996 production vehicle?

A The build of vehicle 5441 is production intent for 1996.

Q Right.

A And it's done as a test in the prototype stage before we went to production.

Q Right. And what you're testing is a new fuel tank

and new fuel rails and matching line bundle that were intended to go into the 1996 production vehicle, right?

A At that time, in '95, they were intended to go into the 1996.

Q Right. And this test is dated April 12, '95?

A Yep.

Q So before you certified in July of 1995 the 1996 production vehicle, correct?

A The test is before we did certification.

Q And, in fact, what happened was you actually implemented in production steel fuel rails and matching line bundle in the 1996 production vehicle, and the only thing you didn't do was the new fuel tank and fuel sending unit which you were still testing in 1996 for the 1997 model vehicle, right?

MS. FOGEL: Objection to the form, assumes facts not in evidence.

THE WITNESS: Yeah, I couldn't say that, because I don't know for certain --

Q (BY MS. SPAGNOLI): Okay.

A -- whether those parts were released separate from the fuel tank system.

Q Well, since you don't call them out as being nonproduction in your 5789 test report, one

explanation for the reason they're not called out is because between April of '95 and January of '96 the fuel rails and matching line bundle that you tested in April of '95 actually became production parts, correct?

MS. FOGEL: Objection to the form. You can answer.

THE WITNESS: That is one possible explanation.

Q (BY MS. SPAGNOLI): And if that is the explanation, and, in fact, the fuel rails and matching line bundle had become production in a '96 Jeep Grand Cherokee that you tested on January 18, '96, and you had a Schrader valve leak in the test, that would be a condition you should have reported to the government because it was a failure of a production vehicle, correct?

MS. FOGEL: Objection to the form.

THE WITNESS: On the assumption that the rail was released, then if it was in production and it failed in a test, we would have reported it. This is why I believe the description fuel sending unit and fuel tank design includes the rail and gas lines because I don't recall what would have been a very large issue of reporting it to the government

at failure. I believe the test 5789 had the complete fuel system that hadn't been changed, which included the tank, the lines, the rails and the bundle.

Q (BY MS. SPAGNOLI): And you're speculating, are you not, as to whether the parts that were proposed in your April '95 test had become production parts before you ran the test in January of '96, right?

MS. FOGEL: Objection to the form.

Q (BY MS. SPAGNOLI): You said you didn't know.

MS. FOGEL: Objection to the form, mischaracterizes his testimony.

THE WITNESS: I am not aware that any part of the fuel system was released as described in 5441 before it passed the compliance tests.

Q (BY MS. SPAGNOLI): Which compliance tests?

A Vehicle 5967.

Q Right. And you would agree with me, though, that you do not have in your either memory bank or at your disposal the actual production parts on the 1996 ZJ vehicle and whether it included the steel fuel rails, Schrader valve and matching line bundle that was tested in April of '95, correct?

A No, and that's what I don't remember, whether --

Q Okay.

A -- the vehicle in 1-18-96, VC5789 had those parts. It's a presumption on my part that the description includes the entire fuel system, and I didn't describe it completely.

Q And you would agree with me you did describe it in the April '95 test report as a separate item, correct?

A In the 4-12-95 on 5441, I described a complete system with the three lines of description there, and it would have been my general habit to shorten that down to the one line.

Q Well, so you broke your habit in the report where you listed it separately or you just felt a need to do it there and not --

THE WITNESS: This is the first occurrence of it.

MS. FOGEL: Objection to form, argumentative.

THE WITNESS: This 5441 is the first occurrence of these parts, and so they were completely described there, and then subsequent testing afterwards uses a shortened version of it.

Q (BY MS. SPAGNOLI): You're speculating about that, aren't you, sir?

A No.

MS. FOGEL: Objection to form.

THE WITNESS: When you introduce the first part -- you can see as you go through all of this work, the first time it's introduced, it's fully described, and then subsequent to that, the trailer hitch single side bracket becomes hitch bracket. They don't always type in all of the description every time you use it.

Q (BY MS. SPAGNOLI): Well, you're supposed to put in the things that do not represent production, and in the case of the 1996 test, the only thing about the fuel system that you said was not production was the tank and the sending unit, right?

MS. FOGEL: Objection to the form, argumentative. You can answer.

THE WITNESS: The test request states clearly that the parts that were changed were the 1997 fuel sending unit and 1997 fuel tank design.

Q (BY MS. SPAGNOLI): It doesn't say design, does it?

A Yes, it does.

Q Well, you're saying fuel tank design means something other than the fuel tank? It means all the other parts in the fuel system? That's what you're telling us?

A It was --

answer.

THE WITNESS: It was probably more properly described as fuel tank system than fuel tank design.

Q (BY MS. SPAGNOLI): Well, it doesn't say fuel tank system, does it?

A No, ma'am, it does not. It says fuel tank design.

MS. SPAGNOLI: Very good. No further questions.

MS. FOGEL: I may have one follow-up. I have to just go off the record.

VIDEO TECHNICIAN: Going off the record at 12:18 p.m.

(Off the record.)

VIDEO TECHNICIAN: We're back on the record at 12:24 p.m.

MS. FOGEL: I have no further questions.

MS. SPAGNOLI: Okay, so we're done. Thank you.

VIDEO TECHNICIAN: Deposition concluded at the 12:24 p.m.

(Deposition concluded at or about 12:24 p.m.)

S T I P U L A T I O N S

IT IS HEREBY STIPULATED AND AGREED by and between the attorneys for the respective parties hereto that all rights provided by the C.P.L.R, including the right to object to any question, except as to the form, or to move to strike any testimony at this examination, are reserved; and, in addition, the failure to object to any question or to move to strike testimony at this examination shall not be a bar or waiver to make such motion at, and is reserved for, the trial of this action.

IT IS FURTHER STIPULATED AND AGREED that this examination may be sworn to, by the witness being examined, before a Notary Public other than the Notary Public before whom this examination was begun, but the failure to do so, or to return the original of this examination to counsel, shall not be deemed a waiver of the rights provided by Rule 3116, C.P.L.R, and shall be controlled thereby.

IT IS FURTHER STIPULATED AND AGREED by and between the attorneys for the respective parties hereto that a copy of this Examination Before Trial shall be furnished without charge to the attorneys representing the witness testifying herein.

FURTHER DEPONENT SAYETH NOT:

_____

JUDSON B. ESTES

Subscribed and sworn to before me
this ____day of _____, 20___.
_____
Notary Public, _____ County

My Commission expires: _____.

STATE OF MICHIGAN)
) ss
COUNTY OF MACOMB)

I, Melinda S. Moore, (CSR-2258), a Notary

Public commissioned and qualified in and for the State of Michigan, do hereby certify there came before me on the date and at the location hereinbefore mentioned, the following named person, to-wit: JUDSON B. ESTES, who was by me sworn to testify truthfully concerning the matters in controversy in this cause; that he was examined upon his oath and his examination was reduced to typewritten form under my supervision; that the deposition is a true record of the testimony given by the witness.

I further certify that I am neither attorney or counsel for, nor related to or employed by any of the parties hereto or financially interested in the action.

IN WITNESS WHEREOF, I have hereunto set my hand and affixed my Notarial Seal this 20th day of June, 2005.

Melinda S. Moore, Notary Public
Macomb County, Michigan
My commission expires: 9-6-2010

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