It's my understanding it is not just based on -- on somebody applying pressure. It's a hose in one circumstance. It's more of a debugging or diagnostic work that was done by several different people at the same time.

INFORMATION Redacted PURSUANT TO THE FREEDOM OF INFORMATION ACT (FOIA), 5 U.S.C . 552(B)(6)

Q. And how did it turn out when they applied pressure to the caster latch system?

MS. DORMAN: Object to form.

0052

A. I don't know that that was done. I believe that the -- the locking system and the latching system are supplied by the same pneumatic line.

Q. (BY MS. RODRIGUEZ) Do you know that?

A. That's my understanding.

Q. Do you know where the clogging was in the pneumatic line if it was at the split -- the splitter or in the -- the line that went -- that fed into both?

MS. DORMAN: Object to form.

A. I don't know where that was.

Q. (BY MS. RODRIGUEZ) All right. And you said you tested how the caster latch mechanism worked after you got some of the Americanos testing, correct?

MS. DORMAN: Object to form.

A. I evaluated an exemplar latch, sure.

Q. (BY MS. RODRIGUEZ) Where did you get the exemplar latch?

A. Well, I had many of the components already in my shop. I think Aaron Jones had inspected that and perhaps you were present as well. So that's the tag axle that I'm referring to. And I updated that with a latching cylinder and a new latch plate.

Q. Where did you get the latch cylinder and latch plate?

A. I requested those from MCI.

0053

Q. Did you go through your counsel or did you go directly to an MCI distributor?

A. I went through counsel.

Q. And when did you get that?

A. It would have been at some period before the report, but I can't tell you specifically the day.

Q. Was it this year?

MS. DORMAN: Object to form.

A. Yeah. It would have been this year because it would have been after the reports were filed from Americanos's experts.

Q. (BY MS. RODRIGUEZ) And you said that you evaluated the performance of the caster latching mechanism, correct?

A. Correct.

Q. Did you document that evaluation?

A. No. I just evaluated it.

Q. Did you evaluate it with and without air?

A. I did. Well, I shouldn't say that I didn't

document that. I've got photographs in this tab 3 that show that, that system as I evaluated it.
Q. And how much air pressure did you supply and how did you supply it when you tested it with air?
A. Well, I supplied a varying level of air pressure. Basically I supplied high pressure at some
0054
point to look at the upper end of the air pressure on the order of 110, 120 psi. And then I can dial down the gauge on your air supply and I evaluated that I think as low as about 40 psi.
Q. What is the factory psi for that air system?
A. They should be operating at 90 to 110 psi.
Q. And where did you get that information from?
A. That's just general pneumatic pressure on a commercial vehicle.
Q. Okay. And did you get any different results when you tested it at 110 or 120 psi versus 40?
A. Well, the force that's applied by that cylinder is proportionately the air pressure. So the force with higher pressure would just go -- the force would be higher so the result of higher pressure in that latch is just a faster latching response. Lower pressure you end up with a slower latching response and at some point I think down on the order of 50 or 40 psi you end up getting it so that it doesn't fully go from one position to the other.
Q. And you tested this with a caster latch cylinder and pin?
A. I'm sorry. Say again.
Q. You tested this with a caster latch cylinder and pin?
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MS. DORMAN: Object to form.
A. I'm not sure what you mean by pin.
Q. (BY MS. RODRIGUEZ) There's a caster latch cylinder, correct?
A. Correct.
Q. And that's on a piece of equipment that you got from MCI counsel?
MS. DORMAN: Object to form.
A. That I got through MCI, sure.
Q. (BY MS. RODRIGUEZ) All right. And when you did that, was anyone present for that testing?
MS. DORMAN: Object to form.
A. It would have been myself, and I don't know if another engineer from my shop was there or not. I don't think so.
Q. (BY MS. RODRIGUEZ) Okay. But Mr. Dacus wasn't there, Dr. Coates, no one else was present --
A. No.
Q. -- nobody else from MCI?
A. Nobody else related to this case, yes.
Q. All right. And the different air pressure

that you applied, other than seeing a different response time in the caster latch mechanism, did you notice any other difference?
A. Well, I just said --

0056

MS. DORMAN: Object to form.
A. I said at lower pressures you would get it to move to an intermediate position and then it wouldn't fully index to the next latched position.
Q. (BY MS. RODRIGUEZ) Where is your documentation of that and at what air pressure?
A. Basically that's my observation that I put in my report. And I didn't try to physically determine the air pressure where it would latch or not latch. I just made a general observation --
Q. Okay.
A. -- based on going down in pressure, you know, every 10 to 20 psi.
Q. So there's nowhere documented in your file at what pressure you -- it would not move forward from the intermediate position?
MS. DORMAN: Object to form.
A. I did not document that specifically. I did not try to determine that specifically.
Q. (BY MS. RODRIGUEZ) When you did that testing, as you I understand it, it was on that tag axle mockup that you did the -- the compression testing, correct?
A. The -- the tie rod bending testing, yes.
Q. So you have not done the testing to evaluate a caster latch mechanism on a loaded coach; is that true?

0057

A. That was not on a loaded coach, that's true.
Q. Did you consider performance would be the same on a loaded coach?
A. Well, in general the performance is going to be similar. Did I try to quantify that? No, I did not.
Q. Would it be different on a moving coach?
A. I would say it could be.
Q. To what extent?
A. The forces that the coach is being operated under may change the way the caster latch mechanism moves. I didn't try to evaluate that.
Q. And how would it change the way the caster latch mechanism moves?
A. I'm not sure I could just evaluate that without trying it. I think you might have to try it.
Q. Would the wheel loads affect the caster latch if there was no pressure on the cylinder?
MS. DORMAN: Object to form.
A. I'm not sure I understand your question.
Q. (BY MS. RODRIGUEZ) Are -- the tires loaded, you understand that concept of tires being loaded?
A. Sure.
Q. Okay. So would the tire loads affect the

caster latch if there was no air pressure on the cylinder?

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A. Well, if the latch is latched in one position or the other, then it won't -- it won't move based on the tire loads, meaning if the latch is latched in either the rearward indexed position or forward indexed position then the effect of changing the tire loads will not affect that latched position.

Q. And how about if the caster is not latched, it's in what you describe as intermediate position, would then the wheel loads affect the caster?

A. Well, it depends. I think vertical loads wouldn't necessarily affect it if it's in an intermediate position.

Q. Would the tag axle caster latch move in the forward position under braking if there was no air pressure on the caster latch?

A. Not if it's in that rearward latched position.

Q. What if it's in the intermediate position?

A. If it's in intermediate position then the application of brakes will create a brake torque that will tend to rotate that towards the forward position.

Q. And if it's in the intermediate position and the acceleration of the coach is going to rotate it or move it in the reverse position, correct?

A. If it's in intermediate position and you accelerate?

0059

Q. Right.

A. Yeah. That could move it rearward, but that depends more on the balance of the acceleration level and the friction of the system, meaning you can develop a lot higher torques with the braking than you can with accelerating.

Q. But you can develop torque such that it will move a free-floating caster in the reverse position, correct?

A. It depends on the friction levels and all that. You might have to evaluate that further, but that would be the direction of movement.

Q. I have -- we've been going about an hour. Do you need to take a break or you want to move forward? I'm getting into another subject.

A. I think a break would be great.

(Recess taken from 10:47 to 10:57 a.m.)

(Exhibit No. 2A marked.)

Q. (BY MS. RODRIGUEZ) Mr. Granat, we've marked 2A as -- which is your supplemental report in this case, correct?

A. Correct.

Q. Have you only prepared two reports in the case?

A. I have.

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Q. Do you have any opinions that you need to supplement since you've written this report February 15, 2012?
A. Sure.
Q. And what are those?
A. Well, basically I've -- I've received more materials on the Americanos testing that was performed in Uvalde, so I've been able to analyze that, at least partially based on what I've got. I've got opinions about that. I think that that, in addition to some of the stuff that we've already talked about. You know, I did more analysis of the actual caster trail and pneumatic trail. I think those broad areas would be the areas that I would talk about.
Q. Have we now explored all your opinions and the work that you did in connection with your calculations for the caster trail and the pneumatic trail?
A. I think in general terms we've explored them. We haven't gone through every single piece of paper here but we've certainly explored them generally.
Q. All right. Specifically what more would you add then?
A. Well, basically I've evaluated the -- the effect of the caster latch mechanism movement in several different positions. We talked about a couple of those
0061
and I added another two other positions -- I'm sorry. We actually talked about three of the four positions that I evaluated.
A third position -- well, the third of four positions would be with the -- the forward horn pawl contacting the limiting strap. So I've evaluated the total trail and the effect of the caster at that position as well.
Q. And what is that?
A. At that position I end up with a total trail -- well, I should say the caster angle at that position is about 4.7 degrees negative, and then the total trail at that position is in the range from .05 to 1.4 inches.
Q. Can you give me the ranges again on the trail?
A. .05 to 1.4. And I believe we already talked about the fourth position that I evaluated and that was the -- the estimated 15 degrees of negative caster from the Americanos testing.
Q. And you said that was 3.9 to 2 inches of negative trail?
A. It should be 3.9 to 2.5 negative.
Q. We talked about your opinion of whether the caster latch mechanism was working at the time of the drive shaft separation. But what position do you
0062
believe that the caster latch was in at the time of the

drive shaft separation?
A. Well, at the -- it's likely that as the coach was driving down the road, the caster latch would be in some sort of intermediate position.
Q. Free-floating?
A. Well, it wouldn't be free-floating. There's a limited range of travel. It's about 2 7/8 inches, I believe, that it can travel back and forth. It appears that it -- under acceleration, it may not re-latch in the forward position and under braking it may not re-latch to the position for rearward travel. So there's a probability that somewhere in between and it would be a variable range. I couldn't tell you where it was in between, but it would be something that would move over time.
Q. And you said it was 2.7 inches of travel --
A. My recollection --
Q. -- that it would free float?
A. I'm sorry. It was 2 7/8 inches is my recollection. I'll get you some more information on that. It's approximately 3 inches.
Q. And where did you arrive at that figure? How did you arrive at that figure?
A. Well, I positioned the exemplar axle in -- in

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my shop at each of those two positions, and then I measured travel distance between those positions.
Q. And what are the photos that you think best illustrate that?
A. Well, within Exhibit 2, tab 3, there are a number of photos of that exemplar system. I'll give you the numbers on those.
Q. If you'll just mark it 2B, the photos that you think best demonstrate the 3 inches of free-floating travel that the caster latch mechanism is not functioning.
A. Well, you want me to mark this -- there's only about -- there's about 14 photos. You want me to mark that whole thing --
Q. Sure.
A. -- because there are measurements in separate photos that go into that --
Q. Okay.
A. -- 3 inches. So 2B would be pages 1 through 7 of these set of photos.
(Exhibit No. 2B marked.)
Q. All right. Why don't you go ahead and clip those for the court reporter, please.
Did you see any evidence on the actual accident coach that would be consistent with your

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conclusion that the caster latch mechanism was in this intermittent 3-inch of free-floating travel at the time of the drive shaft separation?

A. Well, one thing that I considered, which I don't know if it's conclusive or not, but the -- one of the cams or ramps that's on the latch plate or the tongue, one of those cams was fractured off. And in -- if the caster latch is in the full rear position or the full forward position, then the clevis and rollers aren't really touching that -- those cams.

So it appears that, you know, whenever the -- the forces were applied to the latch arm assembly that ended up fracturing off one of those cams, at that time it's likely that that roller or the cylinder was in an intermediate position just because it takes some contact to fracture off that cam.

Q. And Dr. Coates told us yesterday that in his opinion he believes that cam was fractured off as a result of the drive shaft impact when it separated at the transmission end. Do you believe that as well?

MS. DORMAN: Object to form.

A. I think that's a fair candidate. I don't think when we can isolate specifically when that fractured, but that would be something that could have fractured it off.

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Q. What else could have fractured it off?

A. Well, certainly subsequent movement of the tag axle going into the meeting. You know, we've got significant forces imparted through the tires and then also the tire and wheels as it furrows to its rest position. There's an opportunity at that position. It could be -- it could be either of those.

Q. Which is the more likely of the two, based on what you saw?

A. I don't know how to say one or the other is more likely. I think they're both possible scenarios.

Q. Okay. So if that occurred, let's assume it occurred either when the drive shaft separated and hit it or as part of the rollover when the coach is sliding into the ground, that's before the actual separation of the drive shaft. What evidence do you have that the caster latch mechanism was in this intermediate position just before -- moments before the separation of the drive shaft?

MS. DORMAN: Object to form.

A. Well, I'm trying to go back through your question there. Part of your question was that the drive shaft hit it and that kind of implies that the drive shaft contacted the actual cam itself and I don't think that's -- that's not my opinion. And I -- I don't

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know what Dr. Coates testified to, but I don't believe the drive shaft would have gotten there and contacted the cam. It would have been indirect contact of the clevis through deformation or movement of the latch arm assembly.

And what I'm saying, on the fracture of that, that would be at the time of separation or after, the transmission end U-joint. I don't think there's -- apart from the analysis that I did with the -- the movement of the caster latch assembly with low air pressure, I don't think there's physical evidence that -- that I could point to that would say it was in that intermediate position immediately prior to -- to drive -- or transmission end U-joint failure.

Q. Was the caster latch mechanism on the Americanos accident bus unlocked when you inspected it the first time?

A. Unlocked. Well, there's -- there are several different ways of describing that. The -- the latch basically functions in two positions. And if it's in either of those positions I would call it locked or latched.

My recollection at -- of the position at my inspection is that it was -- it was not in either of those positions, the -- meaning the pawls were not at

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the -- the latching position.

Q. Was it -- was the latch broken? The latch mechanism broken?

MS. DORMAN: Object to form.

A. Well, we discussed the -- the cam or the ramp being fractured off of there. That was clearly off. I don't recall whether the -- the rearmost pawl was in that forward latched position or not.

Q. (BY MS. RODRIGUEZ) With the cam being off, could it stay latched?

A. Sure. The cam actually is part of the function to unlatch the cylinder. So if you take the cams off of there, it -- it tends to bring that latch plate down and that will make it more likely that you get the -- the mechanism latched.

Q. Okay. And was there anything else broken on the caster latch mechanism on the Americanos accident bus other than one of the cams was fractured off?

A. Well, I think the --

MS. DORMAN: Object to form.

A. -- the clevis was somewhat out of position. I know the -- the rollers on the clevis were not in position either and that's partly because one of the ramps or the cams was fractured off. I don't think I've got any good images of the -- the rearmost pawl so I

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can't speak to whether that was, you know, in -- in its usual condition or if it was in some damaged condition or fractured condition.

Q. (BY MS. RODRIGUEZ) The clevis you say was out of position. And would it be fair to say that you don't know if the clevis was out of position -- let me back up. How did the clevis get out of position, in your

opinion?
A. Well, I believe that's part of the entire process of the -- the fracture of the -- the cam.
Q. And so the clevis getting out of position would have occurred either at the time of the drive shaft separation impacting the latch arm assembly or part of the bus sliding into the median?
A. Right. The -- the two go hand and hand because the force that's required to fracture the cam off of there is going to have an equal and opposite force acting on the -- the rollers of the clevis.
Q. And so more likely than not, the clevis was in position just prior to the separation of the U-joint at the transmission end?
A. Well, that's what I was saying before. The -- the -- the fact that the cam or the ramp is fractured off indicates that the clevis and the cam were potentially in contact at the time of those forces, at

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the time that those forces were created. And that means that you wouldn't be in the full rearward latched position or in the full forward latched position; you'd be in this intermediate position.
Q. Well, could you -- is there any other reason that you can think of that the clevis would be knocked out of position either from the impact from the drive shaft or from the furrowing?
A. Well, if there's air applied to that cylinder, it would not have been knocked out of position. It would have been -- it would have had its own internal force that would have made it move either to the rearward latched position or the forward latched position.
Q. So you think there's enough air supply to the cylinder to keep the clevis from being knocked out of position even with an indirect blow from a drive shaft?
MS. DORMAN: Object to form.
A. I'm not sure I follow the question. That wasn't --
Q. (BY MS. RODRIGUEZ) Sure.
A. That wasn't what I said.
Q. How many pounds of force is applied to the -- the clevis and the cylinder?
A. My recollection is that's somewhere on the

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order of 1200 to 1500 pounds.
Q. Okay and. How many pounds of force would have been exerted by a rotating drive shaft at, say, 60 miles an hour?
A. At what speed?
Q. 60 miles an hour.
A. It depends on how that interacts. The -- obviously the force between those things for a drive shaft that's still intact, it doesn't matter what the

speed is, then it's not creating any force on there.
Once there's a separation of that rear U-joint, then it's kind of a chaotic event and I don't think you can calculate a force level.
Q. Can you give me a range?
A. I don't think that's possible, no.
Q. It's certainly more than 12 to 15 hundred pounds, isn't it?
MS. DORMAN: Object to form.
A. I would expect levels to exceed 12 to 15 hundred pounds, but that doesn't really apply in the direction that that latching mechanism is -- is -- is moving. Meaning, you have a latch system that indexes between these two positions. It only takes 1500 pounds of force to move that between those two positions. But once it's in one of those two positions, now the latch

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maintains the force. It's -- it's similar to a hitch pin on a -- on a hitch where the hitch pin just keeps the hitch intact and then the hitch takes up much of the force.
Q. (BY MS. RODRIGUEZ) And how much force can the -- once the latch mechanism is engaged, how much force can it withstand?
A. I don't have a specific value for that.
Q. When you looked at the Americanos accident bus, was the caster latch moved forward in the intermediate or neutral position or rearward?
A. My recollection --
MS. DORMAN: Object to form.
A. -- is it's towards the forward position, but I'm going to grab my photos and give you more information.
Okay. The latch at my inspection is at an intermediate position.
Q. (BY MS. RODRIGUEZ) And what photograph shows that?
A. The photograph I'm looking at right now is my vehicle inspection photo 372.
Q. Can we put a sticker, put Exhibit 4 on that.
A. Sure.
(Exhibit No. 4 marked.)

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Q. And do you know if the latch moved in any way from what position it was in just after the drive shaft separation as opposed to what position it was in when you did the inspection?
A. Well, I would expect there would be some movement. I don't have really a way of determining what specific position it would be in at a specific time.
Q. If the tow truck people kept the tag tires on the ground when they extracted the bus from the scene, would it have moved the caster latch position?
A. If they kept the tow -- I'm sorry.

Q. If they kept the tires on the ground?
A. I'm not sure I'm following. You mean when they pulled the coach out of the median as long as they rolled it out of the median?
Q. In their -- in their transporting it away from the accident scene to the salvage yard with the back tires rolling?
MS. DORMAN: Object to form.
A. I guess I don't know how to evaluate that. There could be some movement but it's hard to tell.
Q. (BY MS. RODRIGUEZ) All right. Do you know if they -- when they -- the tow truck people that DPS arranged if they picked up the coach from the side of the road on a lowboy such that all the tires were off
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the ground, or if they towed it allowing the back tires to roll?
A. No. My understanding is they -- they pulled the drive axles out of the truck and then towed it on the ground. I'm not sure if -- I believe the front tires would have been elevated, but I don't believe any of the rear tires would have been elevated.
Q. So they would have been rolling, right?
A. Correct.
Q. So let's get back to the position of the caster latch at the -- just before the separation of the drive shaft at the U-joint, the transmission U-joint. What position do you think it was in? Is that in the intermediate position?
A. I'm sorry. I was distracted.
Q. I understand. The caster latch, what position do you believe that it was in just before the separation of the drive shaft at the transmission end?
A. The -- well, the best indication that I've got is that it was likely in an intermediate position.
Q. Okay. Free floating in that 3 inch of travel?
A. Well, I wouldn't say --
MS. DORMAN: Object to form.
A. -- free floating, but it's somewhere in that 3 inches of travel, neither latched forward or rearward.
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Q. (BY MS. RODRIGUEZ) And you base that opinion on the fact that the clevis was out of position and made contact with one of the cams?
A. That's --
MS. DORMAN: Object to form.
A. That's part of it, but then there's also the lack of air to that system and -- and then the evaluation I did with an exemplar where -- with low air pressure, it wouldn't actually latch by itself in either position.
Q. Anything else in support of that opinion?
A. I think that's it.
Q. Okay. And then what is your opinion of the

location of the caster latch at the time of the drive shaft separation at the transmission end?
A. I thought that's what we were just discussing.
Q. No. What was just before and now the drive shaft has separated?
A. Well, it's -- it's not going to move instantaneously. And the opinion that the contact between the clevis released the clevis rollers and the cam is what knocked the cam off, that would lead me to conclude that the two were in contact when the separation occurred and that would also lead me to conclude that they were in contact immediately prior to

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the separation.
MS. RODRIGUEZ: Objection, nonresponsive.
Q. (BY MS. RODRIGUEZ) My question is more centered around to did the position of the caster latch change after the drive shaft separated at the transmission end, in your opinion?
MS. DORMAN: Object to form.
A. Well, I think immediately prior to separation and then upon separation they would have been in roughly the same position. After that there may be movement of the caster latch, sure.
Q. (BY MS. RODRIGUEZ) By how much?
MS. DORMAN: Object to form.
A. Well, we have a range of movement that would be definable by the -- the latch mechanism itself. Meaning, if it's in an intermediate position it could move to that forward position and the latch plate re-latch at that point. Or if it doesn't re-latch at that point, something's keeping the latch plate from coming down, then it can move forward and contact the -- the strap.
And then that refers back to the calculations that I did on -- on the movement of the caster latch up to that position.
Q. Did you see evidence that the caster latch

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strap was contacted?
A. I saw evidence on the -- the front pawl on the horn that looks like there's some contact between that front horn and the latch itself.
Q. And so is the answer, yes, it looks like you did see evidence that the caster latch, the front horn com -- or impacted the latch strap?
A. Well, I -- I see evidence of contact. I don't know about impacted, which is a word you used. There's just definitely some contact marks around the corners of that pawl. I don't know when in the sequence that would have occurred, but that's the evidence that I see.
Q. Okay. And how much travel would that caster latch have had to travel if the horn made contact with the caster latch strap?

MS. DORMAN: Object to form.
A. Well, that's part of the calculation that I mentioned. The additional travel from the forward latch position to the limiter strap position is approximately 7/8 of an inch. So there's an additional 7/8 of an inch of forward movement of that actual pawl, and that corresponds to approximately 1.7 degrees of caster.
Q. All right. But in terms of movement of the caster latch, if it moves forward it's 3 degrees, correct, forward?

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A. If it moves from the rearward latched position to the forward latch position that's 6-degree.
Q. Right. But if it's intermediate and it moves forward, it's 3 degrees --
A. Well, I'm using intermediate not to specify zero. It's anywhere from, you know, minus 5.9 to plus -- I'm sorry, minus 2.9 to plus 2.9, kind of in that wide range.
Q. Okay. So if it move -- is capable from moving from the latched position forward to unlatched position of 6 degrees, correct?
A. Well, no. It's not an unlatched position. There are two latched positions. It's capable of moving from the rearward latched position which is for forward -- yes, for forward travel, to a 6-degree different position, and then it will latch at that position. So there's not a -- that wouldn't be called an unlatched position. It's still a latched position.
Q. Okay. Thank you for clarifying that. That's what I meant was that when it moves forward it's up to 6 degrees. And then how many more degrees do you add if it moves from the forward latched position to the strap?
A. 1.7.
Q. Okay. 1.7 degrees?
A. Correct.

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Q. Okay. And what does that additional effect of 1.7 degrees have on a caster?
A. That is the change in the caster.
Q. Okay. And what additional effect is the 1.7 degrees change in caster have on the trail compliance or trail --
A. Just the trail.
Q. Trail.
A. The trail at that condition ends up being the numbers we talked about before and that's .05 to 1.4 inches.
Q. And was the caster latch strap deformed in any way, moved out of position, based on what you saw?
A. It appeared to be in position. I didn't evaluate that specifically, but it did appear to be in the proper position.
Q. All right. Let's go over your examination of

the other coaches in which drive shaft separations occurred?

MS. DORMAN: Object --

Q. (BY MS. RODRIGUEZ) And I want to ask you about the coaches as a whole and then if you need to go into specific -- specific coach es to answer my questions, feel free to do so.

A. Okay.

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Q. What I'd like for you to do is go over all of the similarities that you find between those coaches and the Americanos coach?

A. Well --

MS. DORMAN: Object to form.

A. -- I guess I'll have to go through those kind of one at a time. I mean, they're a different transmission and drive shaft configuration for, if I recall, all of them.

Q. (BY MS. RODRIGUEZ) Let me ask you about that. Is that of any significance to you, do you think, in terms of whether a drive shaft can escape a tag axle suspension support?

A. Well, it would -- it would depend on some of the design parameters for that transmission, the engine and transmission I'm kind of thinking of as a unit. But both of those together would determine the placement of that transmission end U-joint. And that -- that design parameter can affect the angle of the drive shaft and the placement of that U-joint. So there -- there is some effect due to that, based on the geometry of the engine and the transmission.

Q. And did you take any measurements to determine if the geometry was substantially different from the geometry on the accident coach?

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A. I did not.

Q. And the difference in the transmission and engine configuration, can that also affect the length of the drive shaft?

A. Sure.

Q. Did you determine the lengths of any of the drive shafts involved in these other -- and I'll refer to them as the Richmond coaches. Okay?

A. Sure.

Q. And the Richmond coaches, just so the record is clear, I'm referring to unit 6468, 6934, 6352, agreed?

A. Well, there is one more coach there. I think it was 60624, but that was not a -- that was the test coach.

Q. Okay. Right. I don't want to -- I don't want to refer to that as the Richmond coach.

A. Okay.

Q. We'll call that the test coach. So the

Richmond coaches will be -- that sustained a drive shaft separation are 6468, 6934, and 6352, agreed?
MS. DORMAN: Object to form.
A. Yes. We can refer to them as that. That's fine.
Q. (BY MS. RODRIGUEZ) Okay. So let's get back

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to the Richmond coaches. Did you measure the drive shaft lengths on any of the Richmond coaches?
A. Let's see. I did measure the 6468 drive shaft which would have been the one that I inspected after my report.
Q. What was the length of that?
A. The measurement that I've got is roughly 28 1/2. And I'm going off of this photograph 7031.
Q. And that's 28 1/2 inches?
A. Roughly.
Q. And how did you take the measurement?
A. That would be from the center of the bearing cup to the center of the bearing cup. But, of course, in this drive shaft the bearing cups are not present.
Q. And do you know how that relates in terms of the length of the drive shaft in the Americanos accident bus?
A. No. I have not tried to compare that.
Q. And do you know, was that fully compressed? Was the drive shaft fully compressed when you took the 28.5 measure --
A. I believe so.
Q. -- measurement?
Do you have any documentation that it was, in fact, fully compressed?

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A. The photographs appear to show that it is fully compressed. That was my recollection.
Q. And which photograph are you looking at?
A. 7017.
Q. Okay. Now, how about unit 6934. Did you measure the length of the drive shaft?
A. Okay. That's the one where the drive shaft was repaired to some extent. So, no, I did not measure that.
Q. And 6352, did you measure that drive shaft?
A. I'm trying to remember if the drive shaft was present because they kind of blur together. No. The drive shaft for -- I don't know 6468. That's why they blurred together. One second. No, I did not measure that drive shaft.
Q. Do you know the make of any of these drive shafts on the Richmond coaches?
A. No. I don't know which -- what the manufacturer of those. I think I probably got that documented with the tag visible if there is a tag.
Q. Would it be fair to say though that the drive

shafts that you inspected, the drive shaft themselves, were substantially similar to the drive shaft of the Americanos accident bus?
MS. DORMAN: Object to form.

A. No. I wouldn't say that. I mean, there -- there are going to be a different part. They're connecting the differential to a different transmission. So I understand that they're a different length. They're going to have a different part number based on the matrix of parts that MCI has associated with different drive lines. And in addition to that they're going to have -- they all exhibited different damage.
Q. Aside from the damage that was exhibited, would you agree though that they were substantially -- and the fact -- the fact that they had a different part number, does that really make them substantially different?
MS. DORMAN: Object to form.
A. They're a different part. I mean, that's definitely a big difference in the -- in the -- in the part world for a -- a drive shaft. Specifically, if they were a different wall thickness, different diameter, I didn't try to evaluate that. So I can't say that those parameters are similar or different. There are similarities in that they are -- you know, they're all drive shafts that work with U-joints at either end and they're -- they have a splined joint in the midsection. But other than that, you know, I can't say that they're substantially similar.

Q. And you can't say they're substantially different, correct?
MS. DORMAN: Object to form.
A. Certainly from the point that they're a different -- different actual part. They're a different component that's made differently. I can't speak to the specifics of that, but it is a different part.
Q. (BY MS. RODRIGUEZ) And what benefit the tag axle suspension support on the Richmond coaches in comparison with the Americanos coach, aside from the damage that was shown, are they substantially similar?
MS. DORMAN: Object to form.
A. Once again, on those there are some similarities, there are some configuration differences, meaning some of the coaches had either different or not present steering stops. Some of the coaches had a lockout device replacing the lock cylinder.
Obviously we've already talked about damage. Their damage patterns are quite a bit different. The -- the -- the two coaches that were refurbished coaches appear to have refurbished tag axle assemblies in there or possibly replaced tag axle assemblies. But I didn't try to evaluate specifically

any differences that would have existed between those and the subject coach.

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Q. What makes you think that they were refurbished by Greyhound?

MS. DORMAN: Object to form.

A. I didn't say that I thought they were refurbished by Greyhound, but I just -- I noted on some of those that they appeared to have some new paint or perhaps they were just cleaned and repainted, but I don't know specifically what was done to them.

Q. (BY MS. RODRIGUEZ) So in your report, for example, page 2, we can take out the sentence the unit had been refurbished by Greyhound, that would be an incorrect statement?

MS. DORMAN: Object to form.

A. No. The units were refurbished, as my understanding, based on a project between ABC Companies and Greyhound. So they were refurbished units meaning they had updated interior, updated parts throughout, and updated exterior.

Q. (BY MS. RODRIGUEZ) And so you don't know who did the refurbishment. You don't know if it was ABC or if it was Greyhound or do you know?

MS. DORMAN: Object to form.

A. That's what I would call it, Greyhound either way. I mean, it's the Greyhound coach that's been refurbished. My understanding is that that's done in a

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project with ABC.

Q. (BY MS. RODRIGUEZ) It's actually done by ABC; isn't it true, Mr. Granat?

A. It may be that the people turning the wrenches are employed by ABC, but I would imagine that the project is being funded through Greyhound.

Q. So if you get your car worked on by Pep Boys and you get a transmission change, then you're going to say it was a transmission change by Kevan Granat because you funded it?

A. I think there's a difference there. I mean, it's not specifically who is turning the wrenches on there. And it really doesn't make any difference in my opinions. It's just that these coaches were previously used by Greyhound and then they've been updated and now they're -- they're refurbished.

Q. At the -- at the request of Greyhound?

MS. DORMAN: Object to form.

A. As far as I know.

Q. (BY MS. RODRIGUEZ) You don't really know if it was refurbished by Greyhound or not, do you?

MS. DORMAN: Object to form.

A. Well, I recall seeing the -- I think it was a bus ride article that was talking about the -- the project that was being worked on by ABC companies to

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refurbish Greyhound buses.
Q. (BY MS. RODRIGUEZ) Okay. You were going through the dissimilarities. I'm sorry. Let's go back to the tag axle suspension support. And maybe we should refer to it as a tag axle lock -- excuse me, latch assembly. And some experts have called it the horseshoe collar with a tag axle harness.
MS. DORMAN: Object to form.
Q. (BY MS. RODRIGUEZ) And Mr. Hoogestraat calls it a guardian containment system.
MS. DORMAN: Object to form.
A. I refer to it as the latch arm assembly.
Q. (BY MS. RODRIGUEZ) Okay. And that's the opening that encircles around the drive shaft on the -- near the transmission end, correct?
A. It's the passage through which the drive shaft goes, part of the passage.
Q. The tag axle latch assembly, is that substantially similar that you saw on the Richmond coaches as the Americanos accident bus?
MS. DORMAN: Object to form.
A. The latch arm assembly?
Q. (BY MS. RODRIGUEZ) Yes, sir. Exclusive -- exclusive of the damage, but the -- you know, the assembly itself, the underlying assembly itself?
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A. The latch arm assembly --
Q. Right.
A. -- I believe the refurbished coaches have the auxiliary strap that was installed by ABC or -- or Greyhound.
Q. You mean the second drive shaft loop?
A. Yeah. The aux -- I've been calling it the auxiliary strap.
Q. You're actually wrong on that, aren't you?
MS. DORMAN: Object to form.
A. I -- that's what I was referring to it as.
Q. (BY MS. RODRIGUEZ) Well, why don't you show me the second drive shaft loop that you think was installed on the two refurbed coach -- Richmond coaches?
A. Well, that's what I'm trying to -- oh. It's on the test coach. I'm sorry. The other coach that was at Richmond, it was on the test coach.
Q. All right. So let's go back to my original question. The latch arm assembly on the Richmond coaches is substantially the same, not referring to the damage, but the assembly itself is substantially the same on the Richmond coaches as the Americanos accident bus, correct?
MS. DORMAN: Object to form.
A. I didn't try to evaluate. The appearance
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is -- is the same. I didn't try to compare

specifically, you know, the part number or any configuration of that part. That was different.
Q. (BY MS. RODRIGUEZ) All right. And then you said that the different transmission and engine configuration could have different geometric angles in which the drive shaft loop -- excuse me, the drive shaft travels or extends from the differential to the transmission; is that what you said?
A. I think that's a --
MS. DORMAN: Object to form.
A. -- general statement similar to that, sure.
Q. (BY MS. RODRIGUEZ) All right. So on a series 60 engine with a V8 transmission, what is the difference between that geometric configuration versus a series 60 engine with an HT-740 engine?
A. I haven't evaluated that specific.
Q. All right. Walk me through any other dissimilarities that you found between the Richmond coaches and the Americanos coaches. And let's not get into the damage patterns yet, but just, you know, the underlying coaches themselves.
A. All righty. Okay. The 6352 coach did not have either steering stop installed and the presence of residue or soil in that -- not soil like dirt, but

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basically grease, that kind of residue in that area indicated to me that that was not a result of the crash. That was a preexisting condition.
Q. Was one fractured? It was installed but it was fractured?
I think if you look on page 4 of your report you state that the right stop was apparently fractured off?
A. Oh, yes. There -- a portion of that steering stop was there, but then that fracture surface was covered with -- with the grease and residue. So that was fractured but not as a result of the -- of the crash.
Q. And how effective are steering stops if they're capable of being fractured off?
MS. DORMAN: Object to form.
A. Well, it certainly depends on the circumstances under which it was operated that fractured them off.
Q. (BY MS. RODRIGUEZ) In fact, the steering stop on the coach that you tested in Uvalde, it had a broken steering stop too, didn't it?
A. It did.
Q. So, I mean, as a design engineer how effective of a design is that if its stop is capable of being

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fractured off?
MS. DORMAN: Object to form.
A. Well, I think they're separate. If you're

talking about the effectiveness of a design and then the potential for damaging that design, they're kind of separate issues. The -- as far as I can tell and certainly looking at the -- the Americanos testing in Uvalde of this year, the stops will stop the motion, the steering motion of the axle.

The -- the potential for that to be fractured off is -- that's a separate issue. Basically that's looking at the use of the vehicle. And under certain circumstances, you know, if there's a curb impact when the tires are being backed up, you could fracture off a steering stop.

MS. RODRIGUEZ: Objection, nonresponsive.

Q. (BY MS. RODRIGUEZ) And that was my question. How effective of a steering stop is it if it's easily capable of being fractured off?

MS. DORMAN: Object to form.

A. Well, I think you're assuming that it's easily capable of being fractured off. I mean, if you bump a tire into a curb and continue to apply engine torque in reverse, that may not be a low force event. Typically a curb impact is a fairly high force event.

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MS. RODRIGUEZ: Objection, nonresponsive.

Q. (BY MS. RODRIGUEZ) Assume with me that the steering stops are easily capable of being fractured off. How valid of a design is that --

MS. DORMAN: Objection --

Q. (BY MS. RODRIGUEZ) -- in your opinion?

MS. DORMAN: Object to form.

A. Well, I don't think I can assume with you that that is the case.

Q. (BY MS. RODRIGUEZ) Sure you can. It's my deposition. I get to ask the questions and that's a hypothetical.

MS. DORMAN: Object --

Q. (BY MS. RODRIGUEZ) Assume that in this hypothetical the steering stops are fairly easily fractured off in normal use of a coach, how effective of a design do you think that is?

MS. DORMAN: Object to form and object to sidebar.

A. It depends on the circumstances under which you fracture it off and it depends on what you mean by easily.

Q. (BY MS. RODRIGUEZ) Okay.

A. Obviously if they -- they just loosen up and fall out driving down the road then they're not

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effective at all.

Q. And if a tire hits a curb and it's fractured off that way, how effective a design is that?

MS. DORMAN: Object to form.

A. I think that's a reasonable design. Like I

said, the impact of a tire on a curb is a typical high force event. In fact, the -- that type of an impact when I was at Ford I would evaluate what we call the pothole effect, when you go over a pothole in the road and you end up with very high wheel forces.

MS. RODRIGUEZ: Objection, nonresponsive.

Q. (BY MS. RODRIGUEZ) Is it foreseeable that bus tires are going to hit curbs?

A. I would say sure.

Q. And so if a steering stop is capable of being broken off because a bus tire hits a curb, how reasonable of a defective of a design is that?

MS. DORMAN: Object to form.

A. It's fine, current, effective design. It just means that if you hit a curb you've got to go under the coach and look and see what sort of damage there is. And that doesn't mean to imply that a light contact is going to fracture them off.

Q. (BY MS. RODRIGUEZ) Can you conceive of a better steering stop design that MCI could have

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employed --

MS. DORMAN: Objection.

Q. (BY MS. RODRIGUEZ) -- such that they had a stop that wouldn't break off if a tire hit a curb?

MS. DORMAN: Object to form.

A. Well, I -- I haven't tried to do that. And the result of doing that is you just pass the forces down the chain. I mean, if you're going to hit something and cause something to fracture, if it's not the steering stop, then it's potentially something else.

Q. (BY MS. RODRIGUEZ) So you can't conceive of a different design?

A. Well, I haven't tried to do that. That is very, very much a standard design for a steering stop.

Q. What other dissimilarities did you find between the Richmond coaches and the Americanos accident bus?

MS. DORMAN: Object to form.

A. Well, in the 6352 coach, I couldn't evaluate the lock cylinder. It was not present.

In the 6468 coach the -- we've already talked about the transmission and the drive shaft, the -- also the -- the fixed lockout device on the locking cylinder. That one -- one of the U-joints wasn't available for inspection so I can't speak to

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that. I believe the other one was present with the drive shaft that I inspected afterwards.

Q. (BY MS. RODRIGUEZ) Were they all 1810 series U-joints that you saw?

A. I didn't try to evaluate that so, no, I don't know.

Q. Would you know what an 1810 series U-joint

looked like just by eyeballing it?
MS. DORMAN: Object to form.
A. I've manipulated the U-joints on this coach. I know what they would look like. I don't have the part numbers committed to memory for some reason. I thought it was a CX part number.
Q. (BY MS. RODRIGUEZ) Well, you understand that different manufacturers assign their own part number, but it -- they -- the different manufacturers make an 1810 series U -- joint. You understand that concept, right?
A. I understand certainly that there are different manufacturers for basically the same replacement part, but I have not evaluated which manufacturer made any of these -- these U-joints.
Q. But have you evaluated if they are 1810 series U-joints regardless of who manufactured them?
A. I did not evaluate that, no.

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Q. What other dissimilarities did you find between the Richmond coaches and the Americanos accident bus, not -- not including the damage? We'll get into that.
A. The similarities or dissimilarities that aren't related to damage, I don't know of others. The -- certainly the main focus of what I was looking at was the damage.
Q. Okay. Of the dissimilarities that you've described for me, are any of those significant in your determination of whether or not the drive shafts were capable of escaping the latch arm assembly?
MS. DORMAN: Object to form.
A. Those dissimilarities?
Q. (BY MS. RODRIGUEZ) Yes, sir.
A. Like I said, the drive shaft angles and the position of the transmission end U-joint can have an effect on that. I haven't evaluated that specifically.
Q. All right. Let's get into the specific damage areas. Let's talk about unit 6468, please. And I'm referring to page 2 of your report. In your report --
A. Do you have my report?
Q. No. I think I gave it back. Get it in front of you if you need to because it will make it go faster.
A. Okay. It's not in the binder anymore.

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Q. Okay. Let's find it.
A. I believe it was marked and it's now floating somewhere.
Q. Here you go.
A. Thanks.
Q. You're welcome. Okay. I'm on page 2 under unit 6468. You state that numerous contact marks were observed on the latch arm assembly. Did you make a determination of what the source of those contact marks

were?
A. Okay. 6468 has contact marks that are apparently due to the -- the rear yoke and potentially the rear portion of the rear U-joint or the transmission end U-joint, and that would be consistent with separation of that U-joint while the bus was in motion while the differential end U-joint was still intact.
Q. All right. So we've got a situation where the drive shaft is still attached to the differential end, separated at the transmission end, and it's flailing about within the latch arm assembly, correct?
A. It's moving around within the latch arm assembly creating contact on that latch arm.
Q. All right. And then you state that there was light contact observed on the tie rod near its midpoint. How -- what caused the light contact?

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MS. DORMAN: Object to form.
A. On the tie rod, that's potentially the drive shaft itself.
Q. (BY MS. RODRIGUEZ) So that would indicate that a drive shaft is capable of escaping the latch arm assembly, correct?
MS. DORMAN: Object to form.
A. Well, certainly throughout this -- this coach's incident, the -- the drive shaft escaped the latch arm assembly and certainly escaped the entire vehicle. I mean, it separated from the vehicle, as I understand. So whether it escaped prior to the differential end separating, I don't think we can -- we can determine that.
Q. (BY MS. RODRIGUEZ) Is the drive shaft capable of escaping the latch arm assembly while it's still attached to the differential end and rotating?
A. Is it capable?
Q. Yes.
A. Certainly under certain operating conditions you could have that happen.
Q. Did you make a determination if the light contact that was observed on the tie rod near its midpoint on unit 6468 was caused by the drive shaft while it was impacting the tie rod while it was still

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connected to the differential?
MS. DORMAN: Object to form.
A. No. I don't think you can determine that it was connected to the differential at that point.
Q. (BY MS. RODRIGUEZ) You state that the contact -- that there was contact observed on the fixed axle mounted locking plates. Are you talking about the tag axle lock plates?
A. Yes.
Q. Okay. I refer to it as clamp plates and then in the middle there's only one lock plate?

A. Okay.
Q. Can we have that understanding?
A. Sure.
Q. Do you refer to all three plates as locking plates?
A. I may have in the past. I think that's -- that's fine. I understand them to be the same thing.
Q. All right. So what caused the contact that you saw on the tag axle clamp and lock plate?
A. That would also be the -- the drive shaft or the -- the yokes on the transmission end of the drive shaft, most likely.
Q. So, again, the drive shaft flailing around within the area of the tag lock assembly, correct?

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A. Well --
MS. DORMAN: Object to form.
A. -- it depends what you mean by flailing. I mean, there's -- clearly it escapes the -- the vehicle at some point and at some point during that process I believe it lightly contacted these locations.
Q. (BY MS. RODRIGUEZ) But you don't know if it was still connected to the differential when it hit the tag lock, right?
MS. DORMAN: Object to form.
A. Correct.
Q. (BY MS. RODRIGUEZ) And you say that the caster latch mechanism was shifted laterally. Do you see that?
A. Yes.
Q. And what caused the lateral shift?
A. That would have been contact between the -- the transmission end of the -- the drive shaft, either the yokes or the portion of the U-joint itself with the latch arm assembly.
Q. Was the caster latch mechanism on the Americanos accident bus shifted?
A. Well, the alignment of the -- the latching clevis and the pawls was misaligned so there was some lateral shift between those two. I don't know if I can

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say that that's solely the shifting of the latch arm or a combination of both.
Q. Would -- is the caster latch mechanism that was shifted laterally on unit 6468 different or similar to the caster latch mechanism that was shifted laterally on the Americanos accident bus?
MS. DORMAN: Object to form.
A. Well, I observed much of the caster latch, but I don't believe we were able to observe the rearmost pawl on the horn of the latch arm, so I can't speak to whether that had the wear pad in place or whether it was in the same type of condition as the subject coach. Other than that, I did not observe anything that was

substantially different.
Q. (BY MS. RODRIGUEZ) Well, the caster latch mechanism on the Americanos accident bus was shifted laterally, correct?
A. Well, to some extent. Like I said, I can't tell if it's a combination of the clevis shifting or the latch arm shifting, but it's -- it's either -- some combination of both of those or one or the other.
Q. Well, could you make that distinction on unit 6468?
A. No. I didn't try to.
Q. All right. Was the tie rod bent on unit 6468?

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A. I believe it was -- was not, at least not visually.
Q. So it's your understanding the tie rod was not bent on 6468?
A. Let me look at my notes. I did not observe any significant bending of the tie rod.
Q. If it was bent in any way, do you have an opinion on how a tie rod would have gotten bent?
MS. DORMAN: Object to form.
A. No. I haven't -- I haven't tried to evaluate that.
Q. (BY MS. RODRIGUEZ) Would you agree that since the drive shaft is capable of hitting the tie rod that it's also capable of bending the tie rod?
MS. DORMAN: Object to form.
A. Well, that certainly depends on -- on how you interact. The tie rod in its usual operating position would have to come down with significant velocity to bend the tie rod.
Q. (BY MS. RODRIGUEZ) But it's capable of doing it, right?
MS. DORMAN: Object to form.
A. I can't say that that -- that's true. I don't think you can, under operating conditions, generate a vertical velocity of that drive shaft straight down into

0103

the tie rod to bend that.
Q. (BY MS. RODRIGUEZ) Even while it's still attached to the differential end, still rotating, you can't imagine that ever happening?
A. I don't think you're going to impact it and do that, no, not like that.
Q. And this bus, it didn't roll over, right?
A. That's my understanding.
Q. And it didn't furrow into the ground or any -- hit any hard object, right?
A. That's my understanding.
MS. DORMAN: Object to form.
Q. (BY MS. RODRIGUEZ) You didn't see any body damage on the exterior of the bus that would indicate any rollover or accident or furrowing or impact damage?

A. I certainly didn't see anything on the exterior of the coach. I know there's limited information available as to the -- the conditions before, during, and after the U-joint separation. So I don't know specifically whether the driver impacted any sort of roadway obstacle or went into the -- into the median.

MS. RODRIGUEZ: Objection, nonresponsive after exterior of the coach.

Q. (BY MS. RODRIGUEZ) So if the tie rod was

0104

bent, how would it have gotten bent if it -- there wasn't a rollover or impact -- side impact?

MS. DORMAN: Object to form.

A. Well, I think you already asked that, and I said I didn't evaluate that. It's not bent in this one.

Q. (BY MS. RODRIGUEZ) If it was bent, how could a tie rod in that situation have been bent if there was no side impact or rollover?

MS. DORMAN: Object to form.

A. I didn't evaluate that. I mean, it's not bent.

Q. (BY MS. RODRIGUEZ) Well, Mr. James takes the position that it is bent and the jury's going to have to decide based on the photos. So if the jury believes Mr. Jones and determines that it's bent, what can you tell this jury about how it got bent?

MS. DORMAN: Object to form.

A. I didn't evaluate that specifically. I mean, certainly as the drive shaft is exiting the vehicle there's potential for contact there. And I don't believe that's going to create enough force to bend the drive -- to bend the tie rod though.

Q. (BY MS. RODRIGUEZ) All right. Can you show me where in your photos that the caster mechanism was shifted laterally and in a rearward position? Can you

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refer me to a specific photo number?

A. Okay. Probably the best photo is 6543.

Q. Was the latch arm, caster latch arm, completely against the back of the tag axle structure?

MS. DORMAN: Object to form.

A. It's adjacent to that structure and the -- the pawls are aligned with the -- the slots in the latch itself. As the coach is sitting there, there's not necessarily contact between the rear section of the horn and the tag axle structure itself, but it's in that rearward position.

Q. (BY MS. RODRIGUEZ) So would you be able to say if it was completely against the tag axle structure or -- or not?

A. I wouldn't say whether it was completely against that position or against that structure or not because that doesn't really refer to it being latched in

the rearward position.
Q. Well, is the pawl evidence that it was in a locked position?
A. I'm sorry. Can you say that again.
Q. Was the pawl evidence that it was in the locked position?
A. The photographs of the pawl in its position in the latch plate is consistent with a latched position in
0106
that rear -- that rear latched position.
Q. And that rear latched position, is that the correct position for the bus going forward or the bus going in reverse?
A. For the bus going forward. Did you hear me?
Q. So then the caster latch is not completely retracted, right?
MS. DORMAN: Object to form.
A. It is in the rear latched position, which would be consistent with forward travel. It is in that rear position. Am I not following your question?
Q. (BY MS. RODRIGUEZ) No. I think we're communicating.
A. Okay. Think we could take a break fairly soon?
Q. Sure.
(Recess taken from 12:05 to 12:46 p.m.)
Q. (BY MS. RODRIGUEZ) I wanted to follow up on some things that I asked you prior to us taking our lunch break. You mentioned that you are not a licensed engineer in the state of Texas, true?
A. Correct.
Q. Have you ever been a licensed engineer in the state of Texas?
A. I have not.
0107
Q. Licensed in any state?
A. I have not.
Q. And also you mentioned that a drive shaft attached at a differential end but not attached to a transmission end is capable of escaping the latch arm assembly under certain operating conditions. What are those operating conditions?
A. Well, certainly I've seen it demonstrated by some of the testing done by Americanos. The testing I'm talking about is the Nappanee testing --
(Conference telephone sounding.)
THE REPORTER: I'm sorry?
A. Nappanee. And the operating conditions there would be, you know, with the coach that's elevated off the ground --
(Conference telephone sounding.)
MS. DORMAN: Sorry.
A. That's with the coach elevated off the ground with basically unloaded tag axle and some vertical load,

and under conditions of the -- I would say unique drive torque input that was applied to that coach.

So I've seen it demonstrated under those conditions. Certainly in that video with the -- the geometry that it was in and with the caster latch apparently damaged in that one, you do see the drive

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shaft escape the -- the latch arm assembly.

Q. (BY MS. RODRIGUEZ) Are those the only operating conditions that you can conceive of as an engineer in which a drive shaft attached at the differential end but detached at the transmission end is capable of escaping the latch arm assembly?

MS. DORMAN: Object to form.

A. Well, no. There are certainly conditions, especially like we have in the subject crash, of course, the drive shaft ends up completely detached from the vehicle. So once you separate the differential end, then it's got to escape from that latch arm assembly.

There are other conditions where I can conceive you have motion of the tag axle suspension. And by that, I mean vertical displacement or lateral displacement that would -- would also allow the -- the drive shaft to -- to escape the latch arm assembly.

Q. What is the level of travel of the tag axle suspension on the 102-DL3?

A. I haven't measured that.

Q. Do you know what it was when the bus rolled off the factory floor from MCI?

A. I haven't evaluated that.

Q. What is it typically on a 3-axle coach?

MS. DORMAN: Object to form.

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A. You mean the vertical travel?

Q. (BY MS. RODRIGUEZ) Yes, the vertical travel.

A. I haven't evaluated that. I don't know.

Q. So when you say motion of the tag axle suspension, that -- that may allow for the drive shaft to escape the latch arm assembly even though it's still attached to the differential end. Can you give us any specifics of the motion of the tag axle suspension in that operating condition?

A. Specifics I don't think so.

MS. DORMAN: Object to form.

A. Regarding just the -- the motion of the tag axle, obviously, if you've got lateral displacement of the tag axle or vertical displacement, you change the -- the opening of the latch arm relative to the drive shaft and relative to the differential connection. So that's -- that's what I'm talking about. If you have that in a -- in a different position then you can -- you can escape, have the drive shaft escape.

Q. (BY MS. RODRIGUEZ) How about if the motion of a tag axle suspension, lateral or vertical, but it's

still within the travel suspension allowed by the coach as manufactured, can you envision the drive shaft being capable of escaping the latch arm assembly in that scenario?

A. Well, that, in and of itself, I haven't seen that necessarily demonstrated. And in I would say -- I'm answering your question based on typical operating conditions of the vehicle, meaning the tires are loaded, the -- the drive torque is coming from the differential -- I mean, the -- coming from the engine initially and then through the differential. So I'm making some assumptions when I answer your question.

MS. RODRIGUEZ: Objection, nonresponsive.

Q. (BY MS. RODRIGUEZ) I think my question was directed to the allowable travel of suspension on a 102-DL3. Can you rule out or can you state that a drive shaft is capable of escaping the latch arm assembly, oven though it's still attached to the differential end but detached at the transmission end within the allowable travel of the suspension of a 102-DL3?

A. Well, my understanding of the Nappanee test is that that travel limit would be within the -- the possible travel limits of the coach. It's an unusual loading in that the drive axle is elevated and the tag axle is not. But I would think that would be within the potential movement of those suspension systems.

And obviously in that particular scenario with the other things that I talked about, I've seen it demonstrated that you can get that drive shaft to exit the latch arm assembly.

Q. And did you see the recent testing that was conducted this month where the tag axle was loaded and the drive shaft while still attached at the differential end escaped the latch arm assembly? Did you see that video?

A. I've not seen any testing this month, no.

Q. Was it previously your opinion that the drive shaft was not capable of escaping the latch arm assembly under any conditions? Was that your opinion at your last deposition? Do you remember?

MS. DORMAN: Object to form.

A. Well, certainly once the coach is sideways in the median, it has to get out. It gets out there at some point. I don't recall specifically whether I said that was possible or not on my last deposition.

Q. (BY MS. RODRIGUEZ) Well, let me ask it more specific then. Was it previously your opinion that the drive shaft, while still attached --

(Conference telephone sounding.)

-- at the differential end but detached at the transmission end is not capable of escaping the latch arm assembly? Was that your opinion previously?

MS. DORMAN: Object to form.
A. Well, I've seen the demonstration from the
0112
Nappanee. So I think initially early on in the -- in this entire suit I was of the opinion that it would not escape. I've seen the demonstration in the Nappanee, and under those conditions obviously it does escape.
Q. (BY MS. RODRIGUEZ) Well, Mr. Coates told us, he and Mr. Dacus -- you know Dacus is one of the attorneys for MCI, right?
A. I do.
Q. Did you visit with John Dacus yesterday before your deposition today?
A. I did.
Q. How much time did you spend with Mr. Dacus?
A. Probably an hour and a half, two hours.
Q. And was that in the afternoon or in the morning?
A. In the afternoon.
Q. What time did you get to Dallas?
A. I think I showed up here at the office at maybe 1:00, 1:30.
Q. And you were gone by 5:00?
A. I think I might have left at 6:00.
Q. All right. So who else were you visiting with then if you were here at their offices for four to five hours and you only visited with Mr. Dacus for an hour, hour and an half, who else did you meet with yesterday?
0113
A. Nobody. I briefly spoke with Ms. Dorman at the end of the day when she was leaving, and most of the time I sat and organized my file and reviewed materials by myself.
Q. All right. Mr. Coates -- or Dr. Coates told us yesterday that he and Mr. Dacus thought it might be a good idea to set up some drive shaft testing where a drive shaft is separated at transmission end, still attached at the differential end to see where -- what kind of witness marks are deposited and where they're left, that sort of thing. Were you aware of any discussion to set up that type of testing?
A. I recall --
MS. DORMAN: Object to form.
A. -- discussion of testing. It would have been sometime last year. We talked a little bit about doing a -- a test where we tried to impact the drive shaft. I'm sorry, impact a tie rod with a drive shaft, but it wouldn't be as you described. It's not a, you know, drive shaft separation type test. It's more of a demonstration as to what -- what type of force you'd have to generate to get abandon the tie rod from a swinging drive shaft.
Q. (BY MS. RODRIGUEZ) And who did you have that discussion with?

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A. I recall very briefly having a discussion with Dr. Coates.
Q. And when was that?
A. It would have been sometime in, I believe, November of last year or maybe -- maybe October, somewhere possibly before my deposition.
Q. And did you think that that was a good idea, that kind of testing was a good idea?
A. I think it's fine as a demonstration. I don't know what happened with it after that, but I think it's fine.
Q. Well, whose idea was it? Was it yours or Dr. Coates?
MS. DORMAN: Object to form.
A. I don't recall. I don't think it was mine.
Q. (BY MS. RODRIGUEZ) Was that testing done?
A. No.
Q. Do you know why not?
A. I think -- if it was before the reports, I think there was an unavailability of parts, and then I don't recall beyond that.
Q. Has MCI service parts, which is a defendant in the lawsuit, have they not been able to get you those parts in the last eight months?
MS. DORMAN: Object to form.
0115
A. I haven't tried to get the parts. I was not trying to get parts.
Q. (BY MS. RODRIGUEZ) Have you done any drive shaft testing or testing to determine what happens when a drive shaft is separated from a transmission end and still attached at a differential end?
A. No. I have not done that type of testing.
Q. Why not?
A. I think the primary function that I'm performing in this case is looking at figuring out what happened under the coach and then, more importantly, figuring out its effect on the handling of the steering dynamics of the coach. So I was concentrating on certainly the net effect of -- of the different theories that were put forth by Americanos.
Q. Well, wouldn't you agree that figuring out what happened under the coach would be good to have drive shaft testing and by drive shaft testing I'm referring to separating a drive shaft at the transmission end and see what happens?
MS. DORMAN: Object to form.
A. I think in order to make that representative it would require some significant work, some significant on-track work and probably a lot of individual runs on the -- on a test surface to try to get a representative
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sample of -- of the effect because the nature of the

separation of that component is very chaotic movement.
Q. (BY MS. RODRIGUEZ) Well, do you think that Mr. Jones' drive shaft testing will refer to that? I think you called it the Nappanee drive shaft testing, but assume it was done in September of 2011?
A. Okay.
Q. Do you have an opinion whether that testing that Mr. Jones conducted was scientifically valid?
MS. DORMAN: Object to form.
A. Well, the testing itself was done, you know, with certain physical parameters. The -- the real question that I've tried to evaluate is was it representative of what we have in this particular subject incident. And in that sense, there are some characteristics of the way the test was run that I think are not representative of our subject incident.
And those would specifically include the -- the initially damaged caster latch mechanism, the orientation of the position of the drive shaft ends and the tag axle vertical orientation, the unloaded characteristics of the tag axle, and then thereby the excessive loading of the drive axle under those circumstances, the -- the application of torque through the power coach.

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And then specifically, as Mr. Jones stated in his report or in his deposition, that the power coach -- the power application was ramped up as separation occurred and continued through that. I think all of those things are artificial characteristics that wouldn't be representative of an actual coach driving down the road having a U-joint failure.
Q. (BY MS. RODRIGUEZ) Well, as whether the caster latch mechanism was working or not working, is that going to contain a drive shaft and latch arm assembly if it separates on the transmission end?
MS. DORMAN: Object to form.
A. Well, the way the -- the drive shaft is moving in that area, it's applying forces to the latch arm assembly, and then those forces are going to get transferred to the tag axle itself. So there is a difference in the way those forces are transferred and then perhaps more importantly the fact that the tag axle isn't loaded or is negligibly loaded means that that tag axle is free to move more so than a fully loaded tag axle. So there -- there's some effect there. I haven't quantified that.
Q. Well, can you describe for us the different forces with -- that would occur with a caster latch mechanism not being operational that would affect

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whether or not a drive shaft can escape a latch arm assembly?
A. Well, the -- the latch arm being not

operational or in -- I'm not really sure -- I'm not really clear based on the testimony of -- of Mr. Jones if that means it was in an intermediate position with no air supplied to it or if it was otherwise. So clearly if it's in an intermediate position with no air supplied to that cylinder, then there is a -- a direction of force that is about that pivot of the latch arm assembly. And we've -- since it's unlatched and floating, you've reduced the amount of force that can be transferred between the structures in that way. And then, of course, the unloading of the axle when you increase the amount of displacement that you can get side to side as well.

MS. RODRIGUEZ: Objection, nonresponsive.

Q. (BY MS. RODRIGUEZ) Setting aside the loading of the axle, just focusing on the caster latch mechanism and whether it was operational or not, is that going to affect whether a drive shaft is capable of escaping the tag ax -- or latch arm assembly if it's -- the drive shaft is still attached to the differential end?

MS. DORMAN: Object to form.

A. Well, like I stated, it does affect the way

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the forces are transferred between the latch arm and the remaining tag axle structure, so it's all interrelated. How much of an effect that is, I don't know. I can't quantify that.

Q. (BY MS. RODRIGUEZ) I understand that you have criticisms of Mr. Jones's results from the drive shaft testing from two -- August 2 -- excuse me, September 2011. Do you have any criticisms of the way it was set up?

A. I think we already went through most of that.

Q. All right. What would be a -- in your opinion, a scientifically valid similar test that Mr. Jones conducted in September 2011?

MS. DORMAN: Object to form.

A. Well, the -- by far the best way to run that test, I believe, would be to run it on a moving coach that's ballasted, basically similar to the subject coach with componentry that's representative of the subject coach. And that gets back into the question of what you do you do with the position of the caster latch and what do you do with the air supply to the caster latch cylinder.

But those questions being aside, you could do that test on a moving coach, and then you'd have to basically repeat that test a fair number of times to try

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to get a -- a representative sample of -- of those tests because there's a considerable random component to that test.

Q. (BY MS. RODRIGUEZ) And would you do that test with the caster latch and the tag axle unlocked and have

the drive shaft separate to see what happens?
A. I'm not sure I follow you. You mean do that test with both the caster latch disengaged or in the reverse position?
Q. Free-floating, not locked.
A. In between and then with the --
Q. Tag axle unlocked.
A. I think you would do that with everything in as best -- best representative condition relative to the subject coach that you could. And certainly that would be with the -- the lock cylinder engaged. There's some question as to whether you would do that with the caster in the free-floating position or you'd also do some samples where it's in one position or the other.
Q. Well, why not do it as -- what I hear you say is that at the time of the drive shaft separation at the transmission end, the tag axle lock was engaged, meaning it was locked, the caster latch was in the intermediate position, meaning it was free-floating within 3 inches. Is that true?

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A. I think that's fair. That's the most likely position for the caster latch.
Q. And so then you could run this test going 68 miles an hour down the test track and have the drive shaft separate at the transmission end to see where the drive shaft goes, right?
MS. DORMAN: Object to form.
A. You could run that test, sure.
Q. (BY MS. RODRIGUEZ) And you have chosen not to run that test, true?
A. I have not run that test.
Q. Now -- and why haven't you chosen not to run that test?
MS. DORMAN: Object to form.
A. I think the better way to evaluate the vehicle handling is to evaluate that with the results of the drive shaft separation and evaluate the theories reflecting those results.
Q. (BY MS. RODRIGUEZ) I'm not sure I understood that answer. If you want to know whether a drive shaft is capable of escaping a latch arm assembly under as close a conditions as what happened in this accident, then why haven't you run that test you just described on the track?
MS. DORMAN: Object to form.

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A. Well, just because I can imagine a test to run doesn't mean that I would run all those tests. What I chose to do was evaluate the theories put forth by Americanos's experts and evaluate the results of those theories.
Q. (BY MS. RODRIGUEZ) And the --
A. And I think that's an appropriate way of doing

that.
Q. And the bottom line is, you didn't run it because that test is not safe?
MS. DORMAN: Object to form.
Q. (BY MS. RODRIGUEZ) There are some safety concerns if you ran that test, right?
A. Certainly if you have a component that you're intentionally failing, there's always a chance of that component can become free and hurt someone. That's absolutely a possibility. There would have to be some steps taken to ensure that --
Q. Would you put --
A. -- that be safe.
Q. Would you put outriggers on the bus so it doesn't roll over --
MS. DORMAN: Object to form.
Q. (BY MS. RODRIGUEZ) -- if you ran that test?
A. Generally when I have done tire failure --

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tire failure testing in the past, I have put outriggers on the vehicle. That was standard test procedure and that was basic policy when I was at Ford.
MS. RODRIGUEZ: Objection, nonresponsive.
Q. (BY MS. RODRIGUEZ) I'm not asking about tire failure. This type of testing you just described, would you put outriggers on the bus to prevent a rollover --
MS. DORMAN: Object --
Q. (BY MS. RODRIGUEZ) -- or try to prevent a rollover?
MS. DORMAN: Object to form.
A. The -- my philosophy on that kind of equipment is you put outriggers on the vehicle if you're doing a component failure such as a tire failure or something else. That's kind of standard practice in the industry. You should put that type of device on -- on the vehicle.
Q. (BY MS. RODRIGUEZ) And the purpose of an outrigger for the jury's understanding is to either prevent a rollover or diminish the adverse effects of a rollover, right?
MS. DORMAN: Object to form.
A. Basically it's to -- to prevent if the vehicle is driven off course or something like that, it's to prevent you from tipping the vehicle over.
Q. (BY MS. RODRIGUEZ) We're now on unit 6934.

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A. I didn't think that last question was relative to any coach.
MS. RODRIGUEZ: Object to the nonresponsive and sidebar question.
Q. (BY MS. RODRIGUEZ) All right. Your report says that the clamping plates showed contact damage. What do you think of the source of that contact damage?
A. That's the transmission end yoke of the drive shaft or possibly the U-joint components at that end.

Q. And in this one, the documentation from the mechanics indicates that the tag tie rod was bent, right?
A. Correct.
Q. Do you have any reason to dispute that the drive shaft hit the tie rod and bent it?
MS. DORMAN: Object to form.
A. No. I think there was definitely contact between the drive shaft yoke and at least the latching or the lockout cylinder that was on the tie rod locking plates. The specific contact that I saw on the tie rod consistent with the bending of the tie rod was in between the clamping plates of that locking mechanism.
Q. (BY MS. RODRIGUEZ) So what -- that would be when the tie rod was pulled and pulled the lock plate out of the clamping plates on the tag lock, that's when

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the bending occurred?
A. Well, in this particular one we don't have a lot of detail. We don't have any information on the operating conditions. We've got just some very, very small information regarding that. But in this one, we have damage in that lock cylinder area, but then we've also got damage up above that on the floor panel of the vehicle. So in that sense you've got potential for the drive shaft to get in between the body of the coach and the suspension of the coach and cause further damage there. I think there's certainly contact between the drive shaft and those components though.
Q. And that would be contact while the drive shaft was still attached at the differential end but detached at the transmission end?
A. No. I don't think I can determine that because, like I stated, there's also contact damage directly above that position, which could be consistent with the drive shaft basically vertically detached from both ends but vertically in between those components.
Q. But you can't rule it out that the drive shaft impacted those component parts while it was still attached at the differential end and detached at the transmission end, correct?
MS. DORMAN: Object to form.

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A. Based on the operating conditions at this point, I cannot rule that out.
Q. (BY MS. RODRIGUEZ) And you inspected the exterior of the coach and found no body damage or any evidence of a rollover or side impact, correct?
MS. DORMAN: Object to form.
A. I think that's accurate. I did not see any rollover or side impact damage.
Q. (BY MS. RODRIGUEZ) So what do you think caused the tie -- the tie rod to bend?
A. Well, the contact on the tie rod is between

the clamping points on the -- the locking plate. So it says to me that something in between those points caused the bend in the tie rod and that would be consistent with the -- the lockout cylinder or a portion of the -- the boss that the lock cylinder normally mounts on. And that would be consistent with, you know, the drive shaft hitting between the body structure and the -- the locking cylinder location. And then --

Q. (BY MS. RODRIGUEZ) So the drive -- I'm sorry. I didn't mean to interrupt.

A. And then the drive shaft getting loaded between those two. That would be after it's already detached from both ends.

Q. And so the drive shaft, whether it was

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attached or not, the drive shaft coming off caused the tie rod to bend, correct?

MS. DORMAN: Object to form.

A. I think more likely than that, the contact would be to the drive shaft, based on the information we have at this time.

Q. (BY MS. RODRIGUEZ) All right. And then this one you noted had the MCI fixed non-retractable pin tag lock kit, correct?

A. It had the lockout kit, yes.

Q. And did it stay locked or was it mechanically unlocked?

MS. DORMAN: Object to form.

A. I'm going to consult my notes so I don't get these coaches confused. Okay. It took me that long to find that section actually for 6934. So I'm sorry. Could you repeat the question?

Q. (BY MS. RODRIGUEZ) Sure. 6934 had the MCI fixed, non-retractible pin tag axle lock, correct?

A. That's my understanding, yes.

Q. And was that lock mechanically opened, unlocked?

A. Well, when I inspected the coach, the clamp plates, the X amount of clamp plates were separate. They were already removed from the coach. The -- the

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welded boss that the cylinder usually mounts to was completely detached. And with that detached that means the locking mechanism or the lockout device would have been detached as well. So it appears at some point during this sequence that was fractured off there.

Q. All right. So even with MCI locking kit, a tag axle can still come unlocked mechanically by a drive shaft hitting it, right?

A. If that --

MS. DORMAN: Object to form.

A. If that fractures that lock device off of there, that could happen, sure.

Q. (BY MS. RODRIGUEZ) You mean lock device

cylinder?
A. Not the -- the cylinder. I'm talking about the lockout device.
Q. The lockout. Okay. The -- instead of it having a -- a cylinder -- it still has a cylinder, but just a different type of pin in it to keep it locked, right?
A. Well, it's not -- the use of the word cylinder can be confusing. The cylinder that we're talking about on the subject coach is a pneumatic cylinder, so it's an actuator.
Q. All right.

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A. On this one we're talking there's a cylindrical piece of steel with a pin that goes through there that's basically fixed.
Q. What do you call the cylindrical piece of steel with a pin inside of it?
A. I've been calling it the lockout kit.
Q. Okay. All right. So a tag axle can come unlocked with the -- with the MCI lockout kit and with the MCI functioning tag axle lock, it can come unlocked mechanically by a drive shaft hitting it, correct?
A. Under certain operating conditions, as you see in coach 6934, that's possible, sure.
Q. And by certain operating conditions, I'm talking about bus driving down the road, normal -- normal operating conditions, transporting passengers, the tag axle is capable of coming unlocked mechanically, whether it had the MCI lockout kit in it or whether it had the actuating tag axle lock, true?
MS. DORMAN: Object to form.
A. If that lock pin is fractured out of there, then that's possible, sure.
Q. (BY MS. RODRIGUEZ) Okay.
A. And then that -- I'm not sure I follow your under certain operating conditions, but I'm talking about certain operating conditions in the respect that I

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did earlier.
Q. No. I mean just driving down the road. I mean, you realize that 6934 wasn't a test bus, right?
A. Well, 6934 --
MS. DORMAN: Object to form.
A. -- I don't know the conditions that it was operating under. That's why I say depending on the operating conditions.
Q. (BY MS. RODRIGUEZ) Well, I mean, as an engineer, looking at this -- the -- all the evidence you have in front of you, tell me, do you think it's capable with a bus normally going down the road with passengers, if that cylindrical housing on the lockout kit or the cylinder on the tag lock is busted off because the drive shaft hits it, then that tag axle is going to become

unlocked, true?
MS. DORMAN: Object to form.
A. Simply if you detach that cylinder or that lockout kit and remove it, fracture it off, however you want to describe that, that would unlock the steering.
Q. (BY MS. RODRIGUEZ) All right.
A. That's not to say that that would cause steering or loss of control, but that would unlock that steering component.
MS. RODRIGUEZ: Objection, nonresponsive

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after unlock the steering mechanism.
Q. (BY MS. RODRIGUEZ) All right. Let's go to the 6352 coach.
A. Okay.
Q. In this particular coach you did look at the drive shaft and you noted that the marks around the circumference of what you're calling the tube indicated that there was no extended rotation of the drive shaft while in contact with the drive shaft loop, right?
A. Correct.
Q. But in our drive shaft in the Americanos accident bus, there was evidence of extended rotation, true?
A. It depends what you mean by extended, but there was full circumferential markings that appear to be consistent with multiple rotations.
Q. Well, I was just using your word when you say no extended rotation. In ours there was extended rotation, multiple rotations, true?
A. Relative to this, I would say, yes, there were multiple rotations.
Q. Did you figure out how many there were?
A. I did not.
Q. You say the evidence on this vehicle was dissimilar to the Campbellton vehicle in the specific

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locations of drive shaft contact. What specific locations are you referring to? And please feel free to refer me to specific photos if that helps.
A. Okay. Probably the best overview photograph that I've got in my collection is going to be photograph 6895.
Q. And that's under which tab, sir?
A. Tab 1.
Q. In what exhibit -- which exhibit is that notebook?
A. 2.
Q. Thank you.
A. And in 6895 the -- the contact damage that you see on the -- the latch arm assembly itself is all concentrated on the lower left portion of that latch arm, whereas in our subject crash latch arm there's distributed damage around that inner surface of the

latch arm assembly. So the contact that we have in this unit 6352 is all directed at one location, whereas the subject coach it's in multiple locations.

And that would be consistent with the fewer revolutions that we see of the contact between the drive shaft and the drive shaft loop as compared to the subject crash where there are more contact marks, more rotations.

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Q. Did the tie rod get bent on 6352?

A. Yes, on this coach.

Q. In your opinion, what caused the tie rod to be bent on that coach?

MS. DORMAN: Object to form.

A. On this -- this coach I really haven't tried to reconstruct it all. But given the damage to the latch arm assembly in that location, I believe the tag axle was shifted from -- that would be from the left to the right enough to contact the transmission end U-joint onto the latch arm assembly. And that damage continued through the -- the lock cylinder and into the tie rod.

Q. (BY MS. RODRIGUEZ) What caused the shifting from left to right in your opinion?

A. Impact with a barrier as -- as far as I understand the crash at this point.

Q. Other than the tag axle assembly, did you see any other understructure damage as a result of that shifting?

A. Well, I'm sure the -- the longitudinal control arms that attach to the tag axle structure, those were deformed from lateral -- lateral impact. There was damage to the tag axle tire and wheel and a portion of the hub in that area.

Q. The longitudinal arms, are those also known as

0134

the radius arms?

A. That's a term that could be used for them, I'm sure.

Q. And the radius arms on the accident bus, those were not damaged; isn't that true?

A. On our subject coach, that's true. As far as I recall, they were relatively undamaged.

Q. All right. Let's -- let me ask you about the front stabilizer bar. You said that indicated a lateral shift?

A. Right.

Q. Can you show me a picture of that?

A. I think it might be a couple of pictures that have to be used to show that --

Q. Okay.

A. -- but I'll --

Q. Just picture or pictures.

A. Okay. In that same tab 1 of Exhibit 2, photograph 6818 and 6820 show the -- the right side and

left side stabilizer bar links and those are both angled to indicate we've got shifting of the stabilizer bar system relative to the frame of the coach.
Q. And this coach rolled over, right?
A. This coach rolled over, yes.
Q. Could the front stabilizer bar shift have been
0135
from the rollover?
A. I haven't tried to determine that. It's certainly a possibility.
Q. Have you ever investigated a bus rollover before?
A. Specifically you mean like in a reconstruction context?
Q. Well, let's just say in any context.
A. I have.
MS. DORMAN: Object to form.
Q. (BY MS. RODRIGUEZ) Okay. And what context was it?
A. I don't recall specifically because I would have been in a support role, but I certainly investigated as a support engineer overturned buses when I was at Carr Engineering, and then also I did some investigation relative to the Anderson Greyhound case previous to this one.
Q. And what is the -- where was the Anderson Greyhound case?
A. I think we talked about that briefly in the first deposition. That's the New York, Elizabethtown.
Q. Okay. All right. Let's talk about the -- some of the testing that was done. We talked a little bit already about Aaron Jones' testing in Nappanee in
0136
September 2011. Are you aware that Greyhound did some containment loop testing?
A. What do you -- I'm not sure what you mean by that.
Q. Well, do you know that Greyhound has put a second drive shaft loop on its 102-DL3?
A. Okay. Now I understand what you're talking about. The -- I'm aware that there were tests run. I believe we got video 12 and video 15 from the tests of that auxiliary loop.
Q. All right. Let's just call it a second drive shaft loop for purposes that you and I are communicating. Okay?
A. Okay.
Q. First of all, do you think it's a good idea to put a second drive shaft loop on the -- towards the transmission end --
A. That's --
MS. DORMAN: Object to form.
Q. (BY MS. RODRIGUEZ) -- on a 102-DL3?
A. I think it's fine. I think it will certainly

prevent some damage to the latch arm assembly. I'm not sure that it would prevent an incident like we have in this case because we've got driver input involved, but -- but I think it's fine.

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MS. RODRIGUEZ: Objection, nonresponsive.

Q. (BY MS. RODRIGUEZ) Just the simple question of, do you think it's a good idea to have a second drive shaft loop on a 102-DL3 at the transmission end? Do you think that's a good idea, Mr. Granat?

MS. DORMAN: Object to form.

A. I think it's fine. I don't think it would necessarily have a different result in the subject crash though.

MS. RODRIGUEZ: Objection, nonresponsive after the word "fine."

Q. (BY MS. RODRIGUEZ) So you would agree with me though that if you have a second drive shaft loop on a 102-DL3 at the transmission end that it would protect the steering components like the caster latch and the tag axle lock, right?

MS. DORMAN: Object to form.

A. Well, I believe from my understanding of Aaron Jones' testimony is that it actually created damage to the caster latch in one of the early tests. I haven't -- you know, seen photographs before and after that test, but that's my understanding of his testimony which would be in disagreement with that.

Q. (BY MS. RODRIGUEZ) All right. Then would you agree with me then that if you put a second drive shaft

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loop on a 102-DL3 at the transmission end that that would prevent damage occurring to the tag axle lock in the event of a drive shaft separation at the transmission end?

MS. DORMAN: Object to form.

A. I would say that that's a potential if the -- as the drive shaft separates from the differential it could prevent that. It could prevent damage to that lock, sure.

Q. (BY MS. RODRIGUEZ) And you saw that the videos of the drive shaft loop that Greyhound installed did prevent damage to -- from occurring to the tag axle lock and the tie bar, correct?

A. Right. In the -- well, the two videos I saw, one of them didn't have continued rotation of the drive shaft so that's of limited value, but in the other video there was no damage to the tag lock.

Q. Or to the tie bar, right?

A. To the tie rod?

Q. The tie rod --

A. Correct.

Q. -- yes.

And as a design engineer, that's something

that would be desirable to you to prevent damage to the steering components like the tie rod and the tag axle lock, correct?

MS. DORMAN: Object to form.

A. I think that's one way of -- of designing the system. I think there are other ways. And I've evaluated the way MCI designed this, the combination of caster latch and the tie rod. And I think the way that they designed it is actually a good way of designing it as well. So either -- either way, I think, is fine.

Q. (BY MS. RODRIGUEZ) So you're saying the way MCI has designed it is it prevents damage from occurring to a tie rod in a tag axle lock the way it's currently designed?

A. I think the way MCI designs it is such that the -- the caster latch and the tie rod lock, any sort of damage that's caused to those, whether it's based on road debris, drive shaft contact or service issues, any of that kind of damage means that you still have positive trail on the tag axle as the coach is going forward.

And regardless of what the position of that latch arm assembly is from all the way rearward against the tag axle all the way forward to the strap, they've assured through their design that the -- that the trail remains positive, meaning that the tires will trail. They will not steer as you see in the -- the UPG, or, I'm sorry, the Uvalde testing by Mr. Yohe and Mr. Fugger. So I think the way that they did it is just another way of achieving the same ends.

Q. And that's based on your calculation and not actual track testing that you've done, right?

MS. DORMAN: Object to form.

A. Well, based on my calculations, but it's also confirmed very clearly in the testing that Mr. Yohe and Mr. Fugger did.

Q. (BY MS. RODRIGUEZ) All right. The Greyhound testing on the second drive shaft loop, do you have any criticisms of that validation testing?

A. I really haven't evaluated it to that regard. I observed the video, but I haven't tried to study it in more detail than that.

Q. And do you have any criticisms of the contain -- the second drive shaft loop that Greyhound has put in the 102-DL3s?

MS. DORMAN: Object to form.

A. Well, certainly in the -- the testing that was done by Yohe and Fugger, there appears to be contact between that second loop and the -- the drive shaft itself. That wouldn't be a desirable characteristic there. However, I think that's primarily due to the -- the absence of the limiting strap on the tag axle. So

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that --
Q. (BY MS. RODRIGUEZ) On the tag axle?
A. That's not a condition -- correct. The limiting strap that's mounted at the -- the latch assembly position. That was not present on that coach.
So in that circumstance, there was some contact between the -- the second loop and the drive shaft. I don't think that's a normal circumstance though.
Q. You know, on the MCI drawings, did you see that there was always a latch strap?
A. I'm sorry. Again?
MS. DORMAN: Object to form.
Q. (BY MS. RODRIGUEZ) The MCI drawings of the 102-DL3 you said you recently looked at the caster latch assembly, right?
A. I'm not sure what you're saying. You mean the drawings or the -- or the actual exemplar that I looked at.
Q. The drawings. I'm talking about the MCI drawings.
A. I have seen several. I have not specifically evaluated ones that you might be talking about.
Q. Do you know if MCI always had the strap?
A. I don't know.
0142
Q. Okay.
A. Certainly on the subject coach it's there.
Q. All right. With regard to the testing that Mr. Jones did, in your report you state that the operators of the test coach and the power coach attempted to synchronize throttle inputs. Where did that get that information?
A. That was my understanding from his description. Basically my understanding is they've got both outboard brakes locked and then they've got both coaches powering independently. And so they -- they're trying to synchronize that application of throttle. And I think he even had a video that showed the synchronization of them.
Q. And what was the rate that -- the target rate that you say they were trying to reach prior to the separation?
A. The target rate?
Q. Right.
A. You mean -- I'm not sure what you mean by target rate.
Q. You say that synchronized power incident to approach a target drive shaft rotational rate. What was that rate?
A. Oh. My understanding from Aaron Jones' either
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report or deposition, I don't recall which one, was he

was looking for something on the order of -- I want to say 1800 rpm, but I may have that number wrong. Yeah, the specific target number.
Q. Do you know what that would have correlated in terms of the rotational rate on the accident bus at the time of the drive shaft separation?
A. I haven't tried to correlate that to a specific speed. I haven't evaluated that. But my understanding from his testimony is he was trying to match the speed of the subject coach based on the DDEC data.
Q. You say that use of the components that have been comprised by earlier tests may significantly affect the circumstances for outcome of the subsequent tests. Did they?
A. Well, certainly the motion of the caster latch assembly that you see in the video is affected by the -- the fact that it was compromised earlier.
Q. Any other effect that you saw?
A. Well, we talked a little bit before about the forces that are transferred from the caster latch to the tag axle structure itself. I think we've already covered that. Other than that, that's the primary -- primary effect I'm talking about.

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Q. As a design engine or mechanical engineer, can you think of any reason why they would purposely leave the componentry the way it was for subsequent tests?
A. I've not tried to put myself in their shoes and -- and guess that.
Q. Well, I'm not asking you to guess what they were thinking. I want to know if you, as an engineer, can think of a way -- of a reason why you would want to leave the componentry the way it was for subsequent tests?
MS. DORMAN: Object to form.
A. I'm not sure what you mean. You mean after tests -- the tests that were creating video 12 and 15?
Q. (BY MS. RODRIGUEZ) Well, you know what -- we're talking about your report here. And you say, use of these components that have been compromised by earlier tests may significantly affect the circumstances or outcome of a subsequent test.
And I'm asking you: Is there any reason as an engineer why you would leave the componentry the way it was for subsequent tests?
A. Nothing's coming to mind right now. Maybe you can clarify the question a little bit because I'm not -- I don't think I'm following it.
Q. You wouldn't be interested to know how the --

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the impact marks or the damage that's done is in relation to a previous test?
A. I'm not sure I'm following you still. What do

you mean?
Q. You wouldn't be interested to know if you -- let's say you separated a drive shaft and you left the impact marks on the componentry and then you separated a drive shaft again to see if the impact marks for the second separation are similar or in a different location than the first separation --
MS. DORMAN: Object --
Q. (BY MS. RODRIGUEZ) -- wouldn't you be interested in knowing that?
MS. DORMAN: Object to form.
A. I haven't thought in that mode, so I'm not sure I follow it. But, I mean, I'm -- I'm saying, I guess, I have no thought that I'd be interested in that.
Q. (BY MS. RODRIGUEZ) Have we gone over all the circumstances which you think differ from -- from Mr. Jones's drive shaft testing to the circumstances of the accident crash? Have you already told me all those differences?
MS. DORMAN: Object to form.
A. Well, we talked about the power source and the issues with that. We talked about the unloading of the

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tag axle itself and the overloading of the drive axle, which those -- those play into also the positioning of the drive shaft relative to the latch arm assembly and relative to or relative between both -- both end of the drive shaft. And we talked about the caster latch arm previous damage.
Obviously there are other artificial differences such as the compromise of the components on the transmission end U-joint that would have led to the separation of that U-joint. Those are kind of a necessity to get that U-joint to separate. That's another potential difference. I think we covered them all.
Q. (BY MS. RODRIGUEZ) Well, how would you get the U-joint to separate on that test you described for us where you're taking the bus down the road and the drive shaft separates at the trans end?
A. I haven't tried to design that test, so there are a number of different ways you could do that.
Q. And one of the ways -- the way that Mr. Jones used is an acceptable way, correct?
MS. DORMAN: Object to form.
A. I think it's probably fine, sure.
Q. (BY MS. RODRIGUEZ) And you had a chance to inspect the bus that Mr. Jones used for his

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September 2011 testing, correct?
A. For the Nappanee coach, yes.
Q. And did you take any measurements at the time you inspected it?
A. I did.

Q. Did you analyze the geometry of the drive shaft in the test position and compare it to a level bus?
A. I would say I have not completely analyzed that. I did take the measurements. I plan on doing further work to evaluate the geometry of that.
Q. Were any of the components bent to accommodate the test position on the test bus?
A. I'm sorry?
Q. Did Mr. Jones have to bend any of the component parts to get the test bus in the position that it was in? They weren't bent, right?
A. I don't think so. No. I didn't see anything in that regard.
Q. Do you know what the minimum clearance between the end of a compressed drive shaft and the leading edge of the tag axle is due to suspension articulation?
MS. DORMAN: Object -- Object to form.
A. No. I do not know specifically what that measurement would be.

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Q. (BY MS. RODRIGUEZ) Do you know how much the Americanos test bus, Mr. Jones' test bus, deviated from a level vehicle?
A. No. I've not evaluated that.
Q. Shouldn't a tag axle or the latch arm assembly always contain the drive shaft, especially when steering components are directly below it?
MS. DORMAN: Object to form.
A. Well, I think that gets back to a previous answer that I gave; and that is, there are a number of ways to ensure that the coach remains controllable in the event of a drive shaft separation. And if you have any sort of damage, whether it's impact related, service related, et cetera, any damage to these components, the approach that MCI took was to -- to make sure that the caster mechanism in its forward most position contacting the loop, even with an unlocked tie rod, still produces self-centering moments on the tag axle.
So I think either one or the other is a fine way of protecting that -- any sort of incident from causing a loss of control.
Q. (BY MS. RODRIGUEZ) Well, do you think that a drive shaft should always be contained in the latch arm assembly at all points of suspension articulation?
A. I haven't evaluated that. I think -- I mean,

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obviously the -- the motion of the suspension in both the drive axle and the tag axle can go through a pretty wide range of motion. And I don't know that you would ever encounter some of those configurations under, you know, typical operation of the bus. So under some special conditions I can envision an alignment that would allow that to separate, true.

Q. Well, you would certainly expect the -- the latch arm assembly to accommodate the 1 inch travel of articulation of the suspension, right?
A. I haven't evaluated that.
Q. All right. Have you evaluated by how much the drive shaft when fully compressed should extend into the latch arm assembly?
A. I have not.
Q. Do you think it should be more than a half inch?
A. I think it depends on operating conditions, sure.
Q. What do you mean by operating conditions? I mean, a half an inch under normal operating conditions, the bus is being used as its intended when it was sold, driving down the highway, transporting passengers?
A. Well --
Q. Do you think it should be able to be more than

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a half of an inch under those circumstances?
A. Well, that gets back --
MS. DORMAN: Object to form.
A. -- again to the previous answer. The -- that level of interference if you want to call it that, is fine as long as you do what the MCI designers did and you have enough other design characteristics to keep the trail positive when -- when and if you have any sort of separation of any of those components.
Q. So you have a half inch of margin of error is acceptable in engineering principles?
A. That's an extremely broad question. Clearly, a half inch is fine in certain circumstances; in other circumstances, it's not.
Q. Well, when I'm referring to a half inch of error in terms of whether the drive shaft is going to be guarded by the latch arm assembly or not, do you think that's an acceptable amount of error?
A. As long as you have --
MS. DORMAN: Object to form.
A. -- redundant set of design characteristics that account for that, I think that's fine.
Q. (BY MS. RODRIGUEZ) Would you agree with me that the kinetic energy of the drive shaft of the separation by Mr. Jones' test was much lower than the

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kinetic energy that occurred at the time of the separation on the accident bus?
MS. DORMAN: Object to form.
A. Certainly the rotational kinetic energy would be less if it's rotating at a lower rate, that's true. I haven't tried to evaluate.
There's also a -- kind of a precessional motion of that drive shaft. I haven't tried to evaluate that. But I would say in general, that would be less.

Q. (BY MS. RODRIGUEZ) Okay. I think we're moving on to my last part. I'm on page 7 of your report.
A. Okay.
Q. And we're talking about the air pressure system on the caster latch assembly. And you state: When operated at pressures well below the vehicle supply pressure, the cylinder cannot complete the indexing motion and is placed in an intermediate position.
And as I understand it, you told me you didn't measure at what air pressure that occurs; is that true?
A. I didn't try to define a specific pressure.
Q. You also state that an operator would be alerted to this condition, meaning the caster latch being in an intermediate position, by functional warning

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lights, correct?
A. Correct.
Q. Do you know if the caster latch warning light was operational on the 102 -- on the Americanos accident bus?
MS. DORMAN: Object to form.
A. I don't recall specifically. I'd have to refer back to inspection notes by Mr. Hoogestraat.
Q. (BY MS. RODRIGUEZ) To your knowledge, is that the only warning that a driver would see -- receive if the caster latch mechanism was in this intermediate position?
MS. DORMAN: Object to form.
A. Well, there's -- there's potential feedback from the axle itself. Meaning, as you get on the brakes or get on the gas, there may be a -- a shifting of the axle that creates some noise that's perceivable by the driver.
As far as indicator lights, that's the only thing that I am aware of that would indicate an issue with that. There may be a buzzer that's associated with that indicator light as well, but I don't recall specifically. I would defer to Mr. Hoogestraat on that.
Q. (BY MS. RODRIGUEZ) And there may be two

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buzzers, right?
A. I would defer to Mr. Hoogestraat. I don't know.
Q. Do you know if the buzzer for the caster latch assembly was working on the Americanos accident bus that would have warned the driver if it was in this immediate position that you talk about?
A. Intermediate position.
Q. Intermediate, yeah.
A. I don't know. I would defer again to Mr. Hoogestraat.

Q. How long do you think that bus, 6063, was in the intermediate position before this accident? For years?
A. Oh. I haven't tried to calculate that.
MS. DORMAN: Object to form.
Q. (BY MS. RODRIGUEZ) How many drivers do you think were driving it in this intermediate position before the accident happened?
MS. DORMAN: Object to form.
A. I have not tried to evaluate that.
Q. (BY MS. RODRIGUEZ) All right. I -- let's take a -- can we take a quick break?
A. I would like that.
(Recess taken from 1:49 to 2:10 p.m.)

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EXAMINATION

BY MR. HAYNES:
Q. For the record, I'm Steve Haynes. We met at your last deposition.
A. Correct, right.
(Exhibit No. 5 marked.)
Q. Let me show you what I've marked as Exhibit 5 and it's -- it's photographs and there's 46 of them because I counted it. If you could generally describe what that Exhibit 5 is.
A. Exhibit 5 is basically a collection of photographs kind of conveniently grouped in one spot that illustrate the various latch arms that we've looked at in this -- in this matter. So that would include some still images that are captured from the video of the testing performed by Mr. Yohe and Mr. Fugger, and then also some images of the subject coach latch arm assembly.
And I should add that there are additional photographs of -- of the tie rods as well. There's also a drawing of the -- the horn that's mounted at the top of the latch arm assembly.
Q. And on some of those pages I -- I'm noticing as you're flipping through them, there are some descriptions on the back?

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A. Correct.
MR. HAYNES: And so I'm going to ask the court reporter that we can also copy the back on those ones where there are descriptions. I don't want to go through each of those photographs individually because I told you I would be relatively brief, but if you could pick out the ones that or representative ones that demonstrate the point that you were trying to make, we'll separately mark those and you can tell me briefly what the point is. Is that okay?
A. Sure.
Q. For example, if there's several of -- of the Uvalde testing and use can one that would describe the

point, that would be fine, et cetera.
A. The -- okay. There are a number of that just show the condition of the latch arm -- not the latch arm, the actual latch mechanism on the subject coach. And they're kind of for general purpose to understand the position of the clevis, the position of the rollers, and that fractured off cam that we talked about earlier. And then there are a number of images captured from the test video. I'll get back to those.
Okay. The test video, these are -- some of these are redundant. I've got some photographs in my binder as well. I'm going to point you to those

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sources.
Okay. Well, there are photographs, both in the binder and in this collection of Exhibit 5. One of the photographs that I'm looking at here shows a close-up of the -- the rearmost pawl that's -- that's part of the horn as well as the latch arm and it's -- it's a frame that's captured from the video. Somewhere in this binder I've got a little better image.
Q. Yeah. That's a really difficult image to make out. Is there another one in Exhibit 5 that would be better or not or is that the best?
A. I thought I had one here in -- if it's not printed out here, it would be within -- well, this one is actually kind of better right here but -- yeah. I don't -- I don't see it printed out here, so I think it must be on this DVD.
Q. Let's use this one. Let me see. Excuse me. That's 2B. Is there anything else marked in here?
A. Well, the whole thing is marked 2.
Q. Right. I was going to mark this as 2C.
(Exhibit No. 2C marked.)
A. Okay. And 2C shows the forward movement of the latch arm assembly in the Americanos January testing in Uvalde. And one of the things I was talking about in this photo from Exhibit 5 which is also shown in 2C is

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the condition of the rearmost pawl that's on the horn that's welded to the latch arm assembly. And the condition of that pawl is -- is, I would say, damaged. It's not just worn. It's severely damaged.
The forward edge of the pawl is supposed to be a vertical face that has a relatively sharp edge to it. That is what is meant to engage the latch itself. And there's also supposed to be a wear pad that's bolted to this pawl and that wear pad engages another wear pad that's on the latch itself. The condition of this pawl is significantly different than what you would expect a properly maintained component to be.
So this -- this has been rounded over and worn. Basically the wear pad is missing. The front

surface has been either fractured off or worn over and that significantly impacts the way it interacts with the latch. And in -- in my opinion, that's what allows this latch arm assembly to have so much more forward movement. That, along with some other factors, allow it to have so much more forward movement than you would see in a real coach on another roadway.

Q. What other factors?

A. One of the other factors we talked about a little bit was the limiter strap that is welded to the

0158

axle. It's a steel strap that basically forms kind of a rounded triangular shape around the latch plate itself. And that limiter strap engages the forward pawl of the -- the horn if the latch is completely unlatched and then --

Q. From what?

A. Well --

Q. Unlatched --

A. Yeah. It's actually beyond that foremost latched position. There are -- there are several positions it could be in. One is latched rearward; one is in an intermediate position between rearward and forward; another one is latched forward; and then there's also an intermediate position between forward, and then contact with the limiter strap.

So this forward pawl, and then subsequently the rearward pawl, would come in contact with the limiter strap and prevent a properly configured coach from reaching this level of caster that you see in 2C.

Q. Going back to Exhibit 5, were there any other -- what -- let's talk about this briefly.

A. Okay. The drawing?

Q. Yes. And we'll mark that as -- oh. You found one?

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A. Yeah, found a better one. As soon as we stopped talking about it, I found the one that we were looking for.

Q. Right.

A. Well, this drawing is --

Q. And we'll call that 5B.

A. 5B?

(Exhibit No. 5B marked.)

Q. Yeah.

A. That drawing is actually a zoomed in portion of a drawing that's in tab 3 of Exhibit 2. And that's specifically looking at the horn that's attached to the top of the latch arm assembly, and that shows at least a portion of the vertical face that I was talking about.

Q. Can you -- can you show me the zoomed in? You said it was zoomed in, something --

A. Yeah. Let me find it. Let me find that. All

right. That is zoomed in on drawing -- the drawing for part number 12L-4-188.
Q. And that's in tab 3 of your Exhibit 2?
A. Right.
Q. Okay. Okay. Go ahead and describe again what we're looking at there and why -- why you blew it up?
A. Well, the -- this vertical section of the -- of the pawl, this is the rearmost pawl, this vertical

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section is where you have a -- a wear pad mounted and that wear pad, as well as the pawl itself, they present a vertical face that is meant to latch in to the latch plate. And then that vertical face also is interacted with the -- the roller axle on the clevis and so this is typically a very sharp-edged or I should say, you know, a very -- a 90-degree face at the top of that pawl and that's in contrast -- significant contrast with the -- the images of the pawl and the January testing.
Q. That was the significance of blowing that up to show that?
A. Right.
Q. Anything else?
A. As far as blowing this up, no.
Q. Right. Any -- anything else that these photos are meant to demonstrate that are contained in Exhibit 5?
A. There are a number of photos or I should say images that were taken from the test video, the Americanos testing. And they just illustrate a different position that the caster latch mechanism would have been in throughout the testing. And those are -- those are kind of duplicative of the portion of the drawings that we marked as -- I'm sorry, the images that we marked as 2C.

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Q. There was something else that you mentioned early on. You said that there was an -- you evaluated an exemplar tag axle caster latch system. And I think that's in your Exhibit 2 as well, the photos from that?
A. That is. I think those were marked. Yes. Those are.
Q. That's already been marked?
A. Yes. Those have been marked as Exhibit 2B.
Q. Oh, okay. So that's already been done?
A. And those, I think, also show the -- the nature of that wear pad on the -- the rearmost pawl. Photograph 7109 shows that, although it's partly hidden by the -- the latch plate itself. But, yes, it's marked as 2B.
Q. Thank you. If I'm under -- this is just to help me real quick. If I'm understanding right, when the caster latch is locked in the rear position for forward travel and that is considered less 3 degrees?
A. That's positive 3 degrees of caster.

Q. And then when it's locked in the forward position for reverse, that's negative 3 degrees of caster?
A. Right. And that's -- assuming we're talking still about the vehicle traveling forward, that would be negative 3 degrees of caster.

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Q. And I think you said if the caster is unlatched and goes forward past the forward latch position for reverse and impacts the latch strap, that's another negative 1.7 degrees?
A. Correct.
Q. So if the -- if the latch strap -- latch strap is in place, the most that the caster or latch mechanism should be able to go forward is the negative 4.7 degrees?
A. Correct.
Q. I understood that, sort of. I think you also said that when you examined the subject coach you noted an impact mark on the latch strap from the caster latch impacting; is that correct?
A. Well, there are -- there are some marks on the forward pawl on the horn and those marks appear to be through contact with that strap, the limiter strap. And that's shown in this top photograph from Exhibit 5.
Q. The very first one?
A. A little bit blurry but it shows the two marks that I'm talking about here.
Q. And that's the mark on the forward pawl --
A. Correct.
Q. -- right?
A. Correct.

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Q. What about, did you also photograph the mark on the latch strap?
A. I don't recall. No. I don't -- I don't believe I have a photograph of the mark on that.
Q. Okay. But what you're telling us here today is that you did observe during your inspection of the subject coach that there was a mark on the forward pawl of the horn of the caster latch mechanism?
A. Right. I think that's -- that's fine.
Q. We'll -- we'll know later what we were talking about?
A. Yes.
Q. Okay.
A. If you just say the forward pawl, yes.
Q. Okay. And you also -- and you took a photograph of that, which is the top photograph in Exhibit 5?
A. Well, and I -- I can't even tell you for sure that that's my photograph.
Q. Someone took a photograph of that?
A. Correct.

Q. And that's the top photograph in Exhibit 5?
A. Right.
Q. And you also observed, although we don't have a photograph we can put our hands on right now, that

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there was an impact mark on the latch strap on the subject coach?
A. I --
MS. DORMAN: Object to form.
A. I don't know that I would describe any of those marks as an impact mark, but they're -- my recollection is there's a contact mark there.
Q. (BY MR. HAYNES) Okay. Well --
A. And I would expect it from the contact mark on the horn.
Q. You would expect the contact mark on the latch strap to -- you expect that that corresponds to the mark on the forward pawl in Exhibit 5?
A. Correct.
Q. When -- when did you -- can you remind me, more or less, when you inspected the subject coach?
A. I think it was in November of 2010, November 4th of 2010.
Q. Okay. Do you have an opinion, as you sit here today, whether the forward pawl of the caster latch mechanism contacted the latch strap at some point during this accident?
A. I think the contact marks there are more likely due to the -- the contact between those two at some point during this crash. I haven't tried to

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determine specifically when that point would be.
Q. Right. I'm not trying to pin you down on did it happen while the vehicle was still on the roadway or after. But we can at least agree that it happened sometime during the accident?
A. I think most likely it did. There's always the case that that could be preexisting contact marks, but I don't have any way of evaluating that.
Q. More likely than not, it happened at some point in the accident sequence?
A. I would expect so.
Q. And I think you said earlier that just before the separation of the drive shaft you believe the caster latch was in the intermediate position between being locked forward or reverse?
A. I think based on the information that we have at this point, that's more likely than not.
Q. And so at some point after the drive shaft separation that you're not able to say when, that caster latch forward pawl made contact with the latch strap; is that correct?
A. Correct.
Q. And the -- when it made contact with the latch

strap, that would equal that negative 4.7 degrees of caster that we were discussing earlier?

A. Yes.

Q. Will negative 4.7 degrees of caster, in your opinion, cause the tag tires to steer?

A. The negative 4.7 degrees of caster still corresponds to positive trail, the total trail on the tires. So that, in and of itself, would not cause the tires to steer. You have to exceed that level of caster to get a negative trail.

Q. You need to exceed negative 4.7 degrees of caster for the tag tires to steer?

A. You have to exceed the negative 4.7 level and potentially a little bit higher than that to get to the point of getting a negative trail on the tires. And as you increased negative trail, then your likelihood of some sort of self-steering increases.

Q. And I have to tell you I'm very confused when you're talking about negative trail. Can you put that in an easier to understand language?

A. I'll try. The -- it's not -- I mean, it's not a real simple concept --

Q. Well --

A. -- but it's kind of an important concept.

Q. -- make it as simple as you can.

A. It's kind of an important concept --

Q. Right.

A. -- with vehicle dynamics. The basic principle that's at hand here is the tire is steered about a particular axis. And by that I mean you can turn it left or right and that turning motion goes around a specific line that is, you know, out there in space. It's a geometric line that you're steering around. And that line that you steer around can move based on this caster latch mechanism. You can move that -- that line, that pivot access forward and you can move it rearward.

Separate from that you have --

Q. Let me stop you for a second. When -- when the caster latch is in the rear position, latched in the rear position for forward travel, what does that mean to what you were just talking about?

A. That means that the top of this steering axis that we're talking about is further rearward in the vehicle than the bottom of the axis.

Q. That corresponds to the position of the caster latch?

A. Exactly. And if -- if you drew a vertical line next to this axis that we're talking about, it would be 3 degrees rearward of that vertical line, rotated rearward.

Q. And so the intermediate position could potentially be the vertical --

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A. Correct.
Q. -- line that you've just discussed?
A. Yes. The center of the intermediate position would be the vertical position.
Q. And then when the caster latch is locked in the forward position for reverse, then that's when -- then explain what that represents.
A. Well, that means now you've rotated the entire caster mechanism forward 3-degrees and so that the top of that steer axis would be forward in the vehicle relative to the bottom of that steer axis.
Q. Okay. Now, negative trail?
A. Okay. The -- the trail is basically a geometric property that tells you where lateral forces on the tire act with respect to the steering axis. That steering axis that we just talked about, it -- it basically intersects the ground at a certain point. So if the caster is positive, the steering axis will intersect the ground at a point just forward of the geometric center of the tire.
And then if you reverse caster to a negative 3-degree angle then this steering axle will intersect the point just rearward of the center of that tire, the geometric center of the tire. And the distance on the ground plane that that center of
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rotation or that axis intersects the ground, the distance between that and the center of the tire is going to be the -- the caster trail that's also called the mechanical trail.
And from earlier in the deposition we talked about mechanical trail versus total trail and pneumatic trail and all those things. You have to add up these different components. When you add up the different components, they tell you where lateral forces are essentially acting with respect to your steer axis.
If those lateral forces are acting rear of the steer axis, then you have positive trail and that creates a self-aligning moment or self-aligning feature of the tires.
If you take that trail values and you add them together and you get a negative number, that means that your lateral force is acting in front of the steer axis and that's where you can get self-steering that would continue to steer one direction or the other.
Q. What number -- I kind of think you've already -- I've already heard the answer, but let me just make sure. Can you identify for us what is the negative degrees of caster where the tag tires would become self-steering?
A. And I used self-steering and that may be kind
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of misleading.

Q. Maybe I said the wrong thing. Did I say it wrong?
A. Well, no. There's a restoring steering effect and that's self-steering also.
Q. Okay.
A. When -- when you have positive trail and the tires are allowed to steer, there's a self-aligning, they want to align themselves with the motion of the vehicle. When you have a negative trail or at least a, you know, a significant amount of negative trail then they don't want to align themselves with the travel of the vehicle and they want to steer away from that.
So once you get an increasing level of negative trail, that's when you get more of this steering effect.
Q. And then what point do you believe that you would start to get the steering effect on the tag tires?
A. Well, the absolute minimum that I've calculated is that -- is pretty close to that 4.7 degrees once you get that to point. The calculation that I did actually has a range. And I've got -- I've got a positive trail for when that pawl contacts the strap. I still got a positive trail that ranges from .05 to 1.4 inches. So once you get past 4.7 degrees of

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negative caster and, you know, maybe the answer is 6 or 7 degrees of negative caster, then you may get more of a turning motion of these tires. The more negative caster you get, the more that effect becomes.
So if you go back to 15 or 30 degrees of negative caster, then you're going to get a much more significant steering effect.
Q. Other than doing the math, what have you done to analyze the effect of negative 4.7 degrees of caster on the potential steering of the tag tires?
A. Well, I've gone through the testing that was done by Americanos in January in Uvalde. And that testing, I think, does a really good job of confirming the calculations here. In a nutshell, if you go through that testing you'll see whenever the caster latch mechanism was cycled from its rearmost position to its foremost position, meaning between the rear position and the forward latched position, there's no self-steering -- I should say there's no misaligned steering of the tag axle, meaning if you observe the testing and you observe when that latch arm goes forward, there's no dynamic steering effect created by the tag axle tires.
However, once the -- the operator of the vehicle steps on the brakes and that latch arm is

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allowed to go forward significantly more, past where this 4.7-degree angle would be dictated by the limiter strap, once you go past that you can see that the trail

becomes negative and the tires steer and then they oscillate about that steer position.

So none of the tests show that steering effect when the latch arm is in this -- either in the position for forward travel or the position for rearward travel.

Q. When it's locked or latched?

A. It's tough to say on that one because I don't think it ever really latches because of the damage to that pawl. I don't think it really ever locks itself in there because once the driver hits the brakes it still comes forward. I think a properly or a proper pawl in that position would stay in place, but that one's been rounded over so much that it can slip underneath the clevis and come out.

But generally speaking when that latch arm is in the foremost position, near where it would be latched for reverse travel, you still don't get a dynamic steering effect of the tires. It's only when you increase the caster significantly, then you get a dynamic steer.

Q. So if I'm understanding you right, you're

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saying that that pawl in the test coach in Uvalde was basically worn?

A. It was damaged in some way. You can see it in the -- the video frames. It's all, you know, silver and very bright and shiny and the shape of it is rounded over. It's not anything like an undamaged pawl. I think I have a good photograph of an undamaged pawl and it looks nothing -- nothing like an undamaged pawl. So I think its ability to latch has been significantly compromised.

Okay. This -- I've got a photograph that's part of a number -- 19 pages of photographs of -- photographs and drawings of the latch arm assembly and the latch itself.

Q. I guess this is 2D maybe?

THE REPORTER: D, yes.

(Exhibit No. 2D marked.)

A. In this photograph you can see the clevis and the roller that are engaged with the rearmost pawl and then that rearmost pawl has a wear pad that's attached to it. And that wear pad you can see has a vertical face and a very sharp edge up here. It's not rounded over like the test coach pawl.

And obviously you can see in this photograph the ability of this wear pad to remain

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engaged with this shaft on the rollers is -- would be much greater than if you just rounded this surface of the pawl completely off. Once you round the surface of that pawl, then brake torques want to rotate the horn forward, it just slips out. And that's what you see in

the testing.
And I think your question was more general than it was about what have I done to evaluate the -- the positive and negative trail. This is part of that answer. And then also in looking at the Americanos testing, the absence of that limiter strap allowed the entire mechanism -- once it slips free because of the worn pawl, the absence of that limiter strap allowed the entire mechanism to shift forward to a much, much greater caster angle.
And that's what we talked about briefly when Tamara was here about the -- the negative 15 degrees of -- approximate negative 15 degrees of caster. And I think that's captured in Exhibit 2C.
Q. And in Exhibit 5, the first photograph in Exhibit 5 --
MR. HAYNES: Off the record.
(Off-the-record discussion.)
Q. (BY MR. HAYNES) All right. The first photograph in Exhibit 5 at the top, is this the latch

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strap that you were referring to?
A. Right. It's -- the MCI name for the part is just strap, but I've been calling it the limiter strap.
Q. Limiter strap. Sorry.
A. I've heard it referred to as a latch strap as well.
Q. What are these marks on the underside of that limiter strap that's seen in the first photograph of Exhibit 5?
A. There appear to be some contact marks there. I've not tried to determine specifically what those are caused by. There are some additional marks off to the right of that photograph as well.
Q. Did you make any evaluation when you inspected the motor coach about whether this limiter strap would have prevented the pawl in the caster latch mechanism from going further than the location of the limiter strap?
A. Well, the -- the geometry -- the relationship between the pawl and the limiter strap shows that there would have been contact there. There's contact mark -- there are contact marks on the pawl itself. So my evaluation of it when I was there is that it would contact it and it wouldn't restrain it at that point.
Q. It would prevent it from going any further

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forward?
A. That's -- as far as I can tell, looking at the coach, that -- that is true.
Q. Other than just eyeballing it, did you make -- did you evaluate it or analyze it in any other way to see whether it would slip forward underneath that limiter strap like in the area where those marks are on

this photograph, the top photograph in Exhibit 5?
A. Well, I took measurements using a laser scanner, but I did not do that specifically to evaluate that and I have not gone back and evaluated that. At that point in time, the -- the caster mechanism wasn't quite the focus.
Q. What I understood you to say earlier with the air supply system being clogged was relevant to this accident because the caster latch mechanism -- that would -- that means that the caster latch mechanism in your mind is probably in the intermediate position at the time of the drive shaft separation; is that correct?
A. I think that's -- as best as I can tell on this case, that's accurate.
Q. Is the fact that the air supply system was allegedly clogged relevant to this accident in any other way, in your opinion?
A. Well, motion of the latch arm assembly is

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dependent on the forces that are acting on it. And clearly, if you have the pneumatic or the air pressure that is trying to keep this latch arm latched, then that's a force that would have -- would have been there with a properly -- properly functioning pneumatic system. And the -- the clevis and the rollers and the latch actively pull back on that rearward pawl.
So there's a force that by design is meant to be there. That's to keep that pawl in place. And where it keeps the pawl in place is down within the engagement of the latch itself or the tongue. So if that's in an intermediate position, we've already gone past this first safeguard, and that first safeguard is what keeps the -- the latch arm assembly caster rearward for forward travel.
Q. If the Americanos theory is correct that the drive shaft struck the caster latch mechanism and unlatched it, either from the rear position for forward travel or this -- well, from the rear position for forward travel, if that's true, how would the air system being clogged be relevant to the accident?
A. Well, it depends on how that drive shaft would have interacted with the top of the latch arm, you know, and created forces present at the horn and present at those pawls. So, I can't say specifically how that

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interaction would have changed. But clearly if you have a restraining force on that rearmost pawl, that will help restrain that pawl within the latch. I don't believe there's been any testing to show that with properly functioning air system that that latch comes unlatched. That's why --
Q. Even if it's hit by the drive shaft, struck by the drive shaft as it escapes the retaining harness?
A. Well, that's why --

MS. DORMAN: Object to form.
A. We talked earlier, I believe, about the -- the fact that the Nappanee test was run with the caster latch already compromised. So that means we don't have a test that evaluates that, with it properly latched rearward and with a properly functioning air system and with a properly conditioned pawl and wear pad that those two cams separate. We don't have something that tells us that.
Q. Do you have any other criticisms of the Fugger and Yohe testing in Uvalde that we haven't discussed today --
MS. DORMAN: Object to form.
Q. (BY MR. HAYNES) -- so far today?
MS. DORMAN: Object to form.
A. There are a few.

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Q. (BY MR. HAYNES) Yeah. I just want to make sure we have them all on the record because I know there have been some that were discussed. If we have any others, if you'd tell me what they are, I'd appreciate it.
A. Well, the first and foremost is the absence of the strap that we talked about. Secondly, the --
Q. For the -- for the caster latch mechanism?
A. Correct. Secondly, the condition of the pawl. And both of those circumstances were not, as I can understand it, you know, intentional by either Mr. Fugger or Yohe because they didn't really look under the coach and evaluate how that system was functioning. They were kind of operating under the assumption that the strap was there and that everything was in proper condition. And that's the way they testified.
They -- and then also Mr. Hazmir testified he thought the strap would have been there. He didn't know why it wouldn't be there. So that's -- that all is one criticism there and that is also, you know, the fact that they didn't really -- Mr. Fugger and Mr. Yohe didn't really look underneath there to see that it was not an original equipment configuration.
Also, the testing that they did, they did not -- they primarily did heavy braking testing. And

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all of the instances where we get some sort of steering to the tag axle tires, some sort of dynamic steering effect, all of those are under braking conditions that I would say exceed what you would expect a -- a commercial vehicle operator to do if they're faced with some sort of a mechanical issue on their vehicle.
You know, the standard accepted method is to release the throttle, get the vehicle under control, and then steer toward the shoulder and slowly bring the vehicle to rest. The testing that they've done is primarily heavy braking testing. That's the limit of

the vehicle's braking capacity.
I reviewed their testing that they've got an actuator underneath there and I don't think that's very valid testing. But I think they actually stepped away from that and really didn't place much value in that either, so I don't really have a criticism that means a whole lot there. But that would be the same criticism as when we talked about the Bosch test track testing with the actuator.
As far as other criticisms, since they were doing testing that they described as brake testing, I would have liked to have seen some data regarding the -- either brake pedal force or brake tire pressure -- brake actuation pressure. I've not seen

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that.
They have a video from the first several runs that seem to capture brake application pressure and then that video got misdirected or adjusted somehow. They -- they no longer had brake application pressure captured.
Q. When it was captured, how would you characterize the direction?
A. It was apparently all the way up to the full pressure that the vehicle was supplying. I think it was on the order of 110 psi which would have been consistent with the full air pressure.
Q. And that would be heavy braking, in your opinion?
A. Right. And that also corresponds to the longitudinal acceleration. Those values are consistent with heavy braking as well. That's kind of a surrogate for brake effort. Rather than looking at the actual pedal force, I was able to at least look at longitudinal acceleration of the vehicle, at least the -- at least the vehicle response to the braking.
Q. How did you measure the level of braking or brake force in your Uvalde testing?
A. Well, my testing wasn't specifically brake testing. So I would say I generally measured it the

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same kind of way. I measured the response of the vehicle.
Q. Any additional criticisms?
A. Well, even that one, I think, is kind of a secondary criticism. My understanding of Mr. Fugger's deposition is that there were additional VBOX units placed on the coach. And this isn't really a criticism but I don't have -- I haven't seen the data for those other VBOXs. So that's something else I need to be able to look at eventually.
My understanding from his deposition is he said that there were four units on the coach. At this point we've got data for one of the VBOX 3 units and one

of the video VBOX units.
Q. Say that again. You have data for the VBOX 3 and what else?
A. And one of the video VBOX units. My understanding is that there's two of both of those units so there should be two more sets of data.
Q. And you don't have that right now?
A. Right. I think in general terms that that covers my criticisms for the most part.
Q. Did you in your testing at Uvalde analyze the controllability of the motor coach with the tag axle unlocked with different levels of braking?

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A. I didn't specifically evaluate different levels of brakes, but in some of the tests I did do moderate braking, both steering and braking to evaluate -- to evaluate that, but I did not do a specific series of brake tests.
Q. I think I remember seeing in your deposition that you said the peak steer input that you performed in your testing at Uvalde was 70 something degrees; is that right?
A. I think that's right. That's for the dynamic tests at frequent speeds. Obviously the low speed tests were higher.
Q. What about did you measure the -- the brake force that you used in any of your testing at Uvalde?
A. The peak longitudinal acceleration, basically the vehicle response. I measured it. I don't have a number for you -- for you specifically what that would be, but it's within the data.
Q. And that -- would it correspond to moderate breaking?
A. That is my recollection, I would say.
Q. Would it -- would it be fair to say that you didn't test the controllability of the coach with the tag axle unlocked beyond moderate braking?
A. I think that's fair to say. I did not do any

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heavy braking that I recall, but I would have to go back and look at it to refresh my memory, to be honest. I think some of the -- some of the brake stops when I drove the vehicle onto the shoulder and then back onto the roadway, they were fairly aggressive. But my recollection is they were on the order of 4/10th of a G rather than 6/10ths of a G.
Q. And you may have told us this already but it's my understanding that your testing at Uvalde did not include a condition where the tag axle was unlocked and the caster latch was either unlatched or in the -- locked in the reverse -- in the forward position for reverse. Does that make sense?
A. Yes. And that's true. I did not evaluate the caster at that time. It was not a -- a theory that was

put forth.
Q. So when -- when you did your testing in Uvalde, the caster latch mechanism was always locked in the reverse position for forward travel?
A. That's correct. Apart from simple reversing of the vehicle between tests, that's correct.
Q. You never positioned the caster latch mechanism in the forward position for reverse and traveled forward during any of your testing?
A. Right. That's correct. That wasn't the
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intention of that test.
Q. And you never performed any testing at Uvalde where the tag axle was unlocked and the caster latch was unlatched; is that correct?
A. Unlatched and meaning it's at an intermediate position --
Q. Yes, sir.
A. -- or unlatched? I did not, that's correct.
Q. Did you perform any testing at Uvalde where the tag tires were turned during forward travel to any significant degree?
MS. DORMAN: Object to form.
A. For the low speed evaluation of the tag axle function, I steered around a tight radius circle. In those tests the tag axle tires were steered. I don't recall specific amount, but I believe it was an inch and a half of tie rod travel whereas the limit would be approximately 2 inches.
Q. (BY MR. HAYNES) Did you do any testing at Uvalde at speeds significantly above 20 miles per hour where the tie rod travel equal an inch and a half?
MS. DORMAN: I need to lodge an objection and also warn my counsel that we're not covering information that was already discussed at the prior deposition. Since Mr. Granat's already been deposed
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about his Uvalde testing, we're not getting into rehashing old testimony. So if you could just keep the questions about what's been done since his first deposition, that would be in line with what your lead counsel has imposed on the rest of us.
MR. HAYNES: Well, I'm just about through.
MS. DORMAN: Okay.
Q. (BY MR. HAYNES) But if you'd answer that, I would appreciate it.
A. I would have to look at the data. Some of the lane changes I recall getting some motion of that tie rod, certainly some level that I recorded in that data. The specific level I would have to actually look at the data. I don't recall.
Q. Do you agree that the Fugger and Yohe testing in Uvalde demonstrated that the motor coach was

difficult to control when the tag axle system was compromised?
MS. DORMAN: Object to form.
A. Well, I think the -- that general statement wouldn't be a fair statement. The -- in that particular testing, the tag axle system was compromised. It was also in some form damaged and modified beyond what their -- their own theories have been in the case.

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And in his driving of the coach, Mr. Yohe is applying heavy braking and maintains that heavy braking. And you can see in the video that's recorded that whenever braking is released, this caster latch arm returns back to a more vertical position. Meaning, the only reason he keeps a negative trail on those tires and keeps the dynamic steering effect of those tires is because he stays on the brake. And -- and I don't think that's a representative way of doing that testing. Obviously I wouldn't expect a -- a commercial vehicle driver to do that if they had some sort of a mechanical issue on the road.
Q. (BY MR. HAYNES) so you don't think it's fair in determining whether the tag axle system is designed correctly to consider the motor coach driver might apply heavy braking?
MS. DORMAN: Object to form.
A. Well, I consider that you can -- you can evaluate that, but that doesn't mean that that's a prudent thing to do.
Q. (BY MR. HAYNES) That's not something that you evaluated though in your Uvalde testing?
MS. DORMAN: Object to form.
Q. (BY MR. HAYNES) The effect of heavy braking on either the tag axle being unlocked or the caster

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system -- caster latch mechanism being in any position other than the reverse position for forward travel?
A. I think --
MS. DORMAN: Object to form.
A. -- generally that's a fair statement because I did moderate braking during my testing and I have tested with a caster latch in the rearmost position.
Q. (BY MR. HAYNES) Would you agree that -- do you agree that there were no significant steering inputs by Mr. Yohe during the Uvalde testing?
MS. DORMAN: Object to form.
A. No significant?
Q. (BY MR. HAYNES) Right.
A. Oh, no. He was steering the vehicle. I think there were some fairly significant inputs.
Q. He was steering the vehicle, sure, but -- okay. Maybe we're using bad terminology. Would you agree that there were no excessive steering inputs by Mr. Yohe in the Uvalde testing?

MS. DORMAN: Object to form.
A. Well, no. I think he had some steer inputs that -- that would match, you know, fairly substantial steering. That description of it, but I don't think it's to the level of inappropriate because some of the steering that he did, for example, in run 13 he -- he
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did some corrective steering to the right and he was able to suppress all the yaw velocity of the vehicle. So basically he -- he responded by steering to the right and was able to bring the yaw rate of the vehicle down to zero. And then, you know, he subsequently straightened to the left again after that. But I think there's -- you know, what I would call a fairly sizable steering input, but it was not something that I would call inappropriate under that circumstance.
Q. Do you make any determination of the amount of that steer input?
A. Well, sure. I've got the test data that was provided by Mr. Fugger and Mr. Yohe. So I've got -- under fab 4 of Exhibit 2 I've got plots of all their steering traces.
Q. What did you show it to be for test 13?
A. Test 13 is --
Q. That's the one we're talking about, right?
A. That's the one I was talking about, yes. Test 13, the peak steering is about 180 degrees.
Q. Is that to the left or right?
A. That is to the right. And that's from an initial angle of about 40 degrees. So that's a change in the steering wheel of about 140.
Q. And you said that that's stand -- I think you
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described that as substantial steer input but not inappropriate because of the yaw in the back of the motor coach?
A. Well, he's responding to the motion of the vehicle. So for that particular motion of the vehicle he applied a steering input to suppress the yaw. So under that circumstance, it's an adequate or an appropriate amount of steering input.
Q. It's an appropriate response?
A. For that specific situation, sure.
Q. Do you remember what the peak yaw rates was for your Uvalde testing?
A. I do not.
Q. Has MCI or their attorneys suggested any additional testing for you to do between now and trial?
A. Not specifically, but I have to evaluate that.
Q. What does that mean?
A. Well, I think there's a little bit more data to review from this testing, so I'd have to evaluate whether that warrants doing additional testing. I think the -- the testing that was done here, although there

are issues with that, it does demonstrate nicely the -- the point that I was making with my calculations about caster trail and pneumatic trail.

Q. At this point have you suggested any additional testing to either MCI or their attorneys?

A. I brought up the idea that we could do additional testing. I'm not sure at this point of the -- the value of doing that though.

Q. What additional testing would you let them know that could be done?

A. Well, the testing that was done by Americanos has, as we discussed, a few of the components compromised. And I think it might be valuable to look at doing testing without all those compromised inputs. But at this point, given the analysis that I've done of this testing, that may not be necessary.

Q. Okay. And just to make sure I understand, you said that you advised MCI and/or their attorneys that additional testing could be performed with components that are not compromised as you say they were in the Americanos test at Uvalde, right?

A. I would say they -- I need to evaluate whether the additional testing should be performed. And that's based on reviewing and analyzing the data that we've got here. At this point I don't know that there's any real utility to that because I have a pretty good understanding of the vehicle dynamics, based on this testing.

Q. I understand, but I'm just trying to go back to what you said a moment ago. You said that additional testing could be performed that would involve not having the components compromised that you were criticizing in the Americanos test, right?

A. Well, I'm saying I would need to evaluate whether that test should be done.

Q. Would that be the only -- only difference? I'm not sure I even understand what you're saying because it -- I'm assuming that in the -- the test that you've already performed you would say that the component -- none of the components on the buses -- motor coach you were using were compromised, right?

MS. DORMAN: Object to form.

A. That's true.

Q. (BY MR. HAYNES) And so if you were going to do additional testing, what other things would you be testing?

A. Well, basically what I'm talking about is testing that's similar to the Americanos testing, meaning positioning of the caster latch in a different position but not with the other issues that we talked about.

Q. Okay. I get that. And then also testing with

additional braking perhaps?
A. I -- I really don't see the value of that. I
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don't think under the circumstances of the subject crash that heavy braking is something that the driver should have done. So I don't think there's much value in evaluating that.
Q. Well, but that -- that's -- obviously there's a disagreement about that, right?
MS. DORMAN: Object to form.
A. I'm not really sure.
Q. (BY MR. HAYNES) Assuming with me that there's -- that -- that Mr. Yohe may have a difference of opinion with you about that and whether her response was reasonable or not, wouldn't it be relevant to find out under the circumstances that you think are appropriate what would be the effect of heavy braking with the caster lock -- caster latch in the position that it was found after the accident?
A. I would have to evaluate that. I mean, that -- my position is basically the heavy braking under the circumstances of the subject crash wouldn't be a prudent thing.
Q. So don't test it?
A. Well --
MS. DORMAN: Object to form.
Q. (BY MR. HAYNES) Don't test it and see what happens?
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MS. DORMAN: Object to form.
A. I don't think it's relevant but --
Q. (BY MR. HAYNES) What's your understanding regarding whether the tag axle system is designed for the tag axle to be unlocked and the caster latch mechanism be either unlatched or locked in the forward position for reverse travel at forward speeds in excess of 20 miles per hour?
MS. DORMAN: Object to form.
A. I'm not sure I followed that.
Q. (BY MR. HAYNES) That was a long question, wasn't it?
A. Uh-huh. A long question for three o'clock in the afternoon.
Q. What's your understanding regarding whether the tag axle system is designed for speeds in excess of 20 miles per hour with the tag axle unlocked and the caster latch mechanism in the -- locked in the forward position for reverse travel?
A. Well, that's part of the analysis that I did on the trail in looking at whether the trail remains positive under those circumstances. So that's kind of my understanding of the design under those conditions. And like I said, that remains to have positive trail at that point, so there is a stabilizing effect on the

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steer of those tires.
Q. So if I'm understanding you right, you're saying that the tag axle system is designed so that even at speeds over 20 miles per hour or substantially over 20 miles per hour, there shouldn't be tag axle steer even if the tag axle is unlocked and the caster latch mechanism is locked in the position for reverse travel?
A. Well, I can't -- the way that you worded the question, I think you said that the tag axle system is designed that way, I don't really know the specific steps that MCI went through, you know, historically to design the system. All I can say is that the configuration of the system is such that under those conditions you'd still have positive trail and you'd still have positive self-aligning moment or a positive aligning moment.
MR. HAYNES: Just give me a couple of minutes. I'm about through.
MS. DORMAN: You want to take a quick restroom break?
MR. HAYNES: If you need one.
THE WITNESS: I'm okay.
MR. HAYNES: We'll finish up here in five more minutes. Melissa, bear with me. This will be real quick.
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Q. (BY MR. HAYNES) I was confused by something I read in your first deposition. You said you do have opinions about the tire marks, right?
A. I do.
Q. How did you characterize what caused the tire marks at the accident site before any part of the motor coach entered the right shoulder?
A. Well, before any part of the motor coach entered the right shoulder there's a combination of braking marks and then there's some oscillating tire marks that are attributable to the drive tires. Meaning, we have two parallel -- parallel oscillating tire marks very distinctive in the photographs. That's as the coach is approaching the shoulder.
Q. And are you saying those are caused by excessive braking or -- or not?
A. Well, there are brake marks associated with that portion of travel. Not all the tires are leaving locked wheel skids, so they're not that kind of braking marks. But the -- the oscillating marks are going to be due to a combination of braking and then also the rotational and balance of the drive shaft con -- connected to the differential. Meaning, the differential is being kind of bounced around and as the drive axle tires are being braked and steered, then it's
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leaving those oscillating marks on the roadway.

Q. Is there a difference in your mind between locked wheel skid marks and marks -- tire marks that are left by braking?
A. Certainly there can be a difference. There's a different degree of braking associated with those. In the -- the oscillating tire marks, for example, you can see where those oscillate as the drive shaft is spinning and then toward the end of this right turn motion of the vehicle the oscillations just kind of taper down to nothing and the tire marks become kind of the more typical longitudinal striations of --
Q. Locked wheel skid marks?
A. If not locked wheel, very, very close to locked wheel skid marks.
Q. And then --
A. And then those marks cease because the brakes are released.
Q. And then those locked wheel marks, those are in the area where the motor coach is heading on -- or the front part of the motor coach is on the right shoulder?
A. It may already be on the right shoulder at that point. I'm not really sure --
Q. And --

0198

A. -- specifically.
Q. Okay. Before that, the tire marks on the road, in your opinion, are any of those locked wheel skid marks or not?
A. I don't know if I've determined specifically if those are locked wheel skids. I would say the tire marks are indicative of pretty heavy braking. I don't recall at this point whether they would show you characteristics of a locked wheel skid. My recollection is, no, they don't have real distinct longitudinal striations in them.
Q. That's what I understood from Mr. Irwin and I just wanted to see if you agreed with that. You did --
A. You understood from who?
Q. Andrew Irwin. Andy Irwin.
A. Okay. Well --
Q. Basically I wanted to see if that was your opinion as well or if you have a different opinion.
A. I haven't read his deposition but if you're saying what I just said matches what he said, then, yes, I would agree.
Q. Do you think that the heavy braking as you characterized it that Mr. Yohe did at the Uvalde testing is comparable of the braking of Ms. Morado in this accident?

0199

MS. DORMAN: Object to form.
A. Well, the braking that Mr. Yohe did is -- at least in many of the tests, is hard braking throughout,

meaning he attains, you know, .5 Gs and stays there. The evidence that I see in the subject crash is that there -- there is a period of some pretty heavy braking, for instance, where we talked about the drive axle tires going from oscillating marks to more longitudinal striations. That would be a consistent level with what Mr. Yohe did but it's on a different duration because those marks go a certain distance and then they basically cease or they stop making that kind of tire mark and that would be indicating that she released the brakes at some point there and then --

Q. When the motor coach was on the right shoulder --

A. Right.

Q. -- is that what you're talking about?

A. Well, as it's approaching. I don't think the entire motor coach is on the right shoulder but a portion of it is.

Q. Before or contemporaneous with the left turn steer?

A. Correct. Well, in general terms contemporaneous, but it may be plus or minus a second,

0200

I'm not sure.

Q. I guess what I'm asking is -- is the brake force that Mr. Yohe used in the Uvalde testing, was that comparable to what Ms. Morado was doing in this accident sequence or is there some distinction that you would make beyond what you just said, what you just told me?

MS. DORMAN: Object to form.

A. I think the distinction is what I just said primarily. I think the levels in brief moments might be similar or were likely similar, but I don't think the duration was nearly the same. Meaning, there's a much longer duration applied by Mr. Yohe.

Q. (BY MR. HAYNES) Was it your assignment in this lawsuit to evaluate our -- Americanos' specific theories or to analyze and determine what happened to cause this accident?

MS. DORMAN: Object to form.

A. Well, I guess it's a little bit of both.

Q. (BY MR. HAYNES) I think that's all the questions I have. Oh, no, no, no. I've got a couple -- I just want to clarify what these are. This is attachment -- attachment page 8 and page 9 of your report where it lists documents reviewed. In number 170, test run configurations, what does that refer to?

A. That's attached to the supplemental report?

0201

Probably.

Q. I thought so.

A. Well, here, I've got a supplemental report. What page is it did you say?

Q. Page 8 is number 170. It says, test run

configurations and page 9, 176, it says, test 10. And I was just curious what those are?
A. Could I see that --
Q. Yeah, sure.
A. -- because that doesn't match this.
Q. Maybe it's the first report. I'm not sure. That's all I have.
A. Is this a document that you created? It's not mine.
MS. DORMAN: No. That's from our designation. That's from the first one.
MR. HAYNES: Oh. Okay.
THE WITNESS: Can I say this --
MR. HAYNES: Sorry.
MS. DORMAN: That's okay.
MR. HAYNES: I didn't create it.
A. Okay. My -- my recollection of the item called test run configuration --
MS. DORMAN: Yeah. Actually this -- this is recent because it's after -- because we've got the

0202

January 2012 information in there too so.
A. And I think this test run configuration refers to there was a PDF of the notes taken by Mr. Fugger, I believe, in January -- in the January testing. That is called test run configurations, I believe.
Q. (BY MR. HAYNES) And then the next page circle is test 10?
A. Test 10 I think is the CD or DVD that was in there that was just labeled test 10. It was one of several disks that included the testing from the January testing.
Q. Americanos' testing --
A. Yes.
Q. -- at Uvalde?
A. Yes.
Q. Okay. Was there anything significant about Americanos's test 10 in Uvalde that you can recall?
A. My recollection is that is run with the actuators, so I didn't really -- didn't really place much weight on that.
Q. Do you recall what this document, certificate of attendance from MCI regarding a webinar on August 24, 2011, if that was produced at your last deposition or not?
A. I think it was produced since. I think this

0203

is a collection of documents that were produced by Americanos, if I recall right. I think that's the case. Yeah. It's got some training information and some service information from Americanos.
Q. Let me go ahead and mark it just to be --
MS. DORMAN: What are the Bates numbers?
Q. (BY MR. HAYNES) -- to be safe.

MS. DORMAN: AUSA-011539 through AUSA-011581.
MR. HAYNES: Okay. Let's go ahead and mark that as an exhibit. Thanks.
(Exhibit No. 6 marked.)
Q. (BY MR. HAYNES) Okay. That's it. I appreciate your time.
A. Okay. Thank you.
(Reporter's time: 3:30 p.m.)
EXAMINATION
BY MS. DORMAN:
Q. Kevan, I have a couple of follow-ups for you. Do you need a break?
A. No.
Q. Okay. You mentioned that some of the Americanos driving tests that were done at Uvalde actually support your theories and your opinions in this case; is that correct?

0204

A. Well, the evaluation that I did that we talked about in depth, the caster trail and pneumatic trail, those calculations basically predict when you would have some sort of a dynamic steering of the tag axle and the testing, and my observation of the testing supports that that's accurate.
Q. Okay. Are there any other test results that you saw that would support any of your opinions in this case regarding the handling and stability of the 102-DL3?
A. I think there were additional tests run by Mr. Yohe that were similar to the configuration that I would have run just in the sense that he ran a test with a caster latch in the rearmost position of forward travel and with the tie rod unlocked, which would be similar to the testing that I ran, and the response of the vehicle from that is that is very stable and I think Mr. Yohe's opinion was that the stability of the coach under that circumstance is appropriate, and that's what I also concluded from my testing.
Q. Okay. Which of Americanos Uvalde -- Uvalde tests show the most dramatic results from the vehicle, the most movement, the most change in the vehicle's direction?
A. Well, tests 9 through 13 all show some yaw

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movement of the vehicle with varying levels. The tests prior to 9 don't really show much -- much dynamic yaw movement.
Q. And which of these tests were performed, if you can recall, with the horn, the caster horn in its far forward position which is outside of the tongue plate?
A. Well, the -- well, test 10 and 11 I didn't really -- really evaluate it. I didn't really evaluate

in great detail because they included the actuator, so I leave those out of the mix.
Q. Okay.
A. But certainly tests 9, 12 and 13 were all performed with the -- the caster latch mechanism beyond its operational range.
Q. If Americanos had used a 1995 model 102-DL3 coach that was equipped as it was originally equipped, would the -- would we see the dramatic results that you saw in test 9, 12, and 13 of the Uvalde testing?
A. No. The -- the dramatic dynamic steering effect of the tag axle is -- is point by point consistent with the dramatic forward movement of the caster latch arm. So with the proper pawl on the horn of the caster latch and then also the proper re -- limiter strap on the coach, you would not get to the

0206

position that allowed those dramatic results.
Q. Do you think that those tests 9, 12, and 13, would be a fair representation to a jury of what a 102-DL3 would do with an unlatched caster assembly?
A. Well, no. Just from the standpoint that the caster response of the latch arm due to the heavy braking exceeds what the -- the usual operational boundaries of that coach will be. So that's what leads you into this negative trail area. That's what leads to the steering of the tag axle tires.
Q. And so to simplify this, if you wanted to show a jury what can happen when the latch arm assembly is in the position that Americanos claimed, you would not have done it with a coach equipped like their test coach was; is that fair to say?
A. Well, I think at least the -- the -- the rearmost pawl should be in, you know, an undamaged condition, and then it should at least have a limiter strap installed on the coach.
Q. And the results that you see in Americanos Uvalde test, the dramatic results are simply not possible with a coach that's got the proper equipment on it, the 102-DL3; is that right?
MR. HAYNES: Objection, leading.
A. The -- the extreme caster motion that you see

0207

in the Americanos testing -- tests is not something that you would see in a properly configured coach.
Q. (BY MS. DORMAN) And so let me ask this so I hopefully won't draw an objection. Do you have an opinion of whether or not the Americanos testing was a fair representation of what would happen in a properly equipped 102-DL3 to get the -- the type of result that they were trying to get?
A. Well, I think the coach as equipped was -- was modified from its original equipment configuration in such a way that you did get results that weren't

consistent with original equipment configuration.
Q. And would those results be possible with the original equipment configuration?
A. With the original equipment configured as it should have been, then I don't think those results were possible, no.
Q. Do you have an opinion of whether the MCI design of the tag axle system is reasonably safe?
A. I do. Based on the analysis that I've done on the caster trail and pneumatic trail, it appears that the system was specifically designed to maintain a positive trail throughout its operational range, even with some sort of a compromise, whether it's service or road hazard or whatever. Even with a compromise to the

0208

lock cylinder of the latch.
Q. I'm going to show you --
MS. DORMAN: I need one exhibit sticker, please. This is the invoice for shipping. What exhibit are we on?
THE REPORTER: 7.
MS. DORMAN: Thank you.
Q. (BY MS. DORMAN) What I've marked as Exhibit 7, do you recognize that document?
A. I think in general. I don't know that I've specifically seen it, but I recognize what it is.
Q. What is it?
A. It's just a shipping invoice that reflects shipment of the drive shaft from coach 6468 and the additional components and that would have been shipped from my office to Andrew Irwin at Scientific Analysis.
Q. All right. Why was it necessary for you to ship the drive shaft from Greyhound unit 6468?
A. That wasn't available for inspection when I inspected the coach 6468, so it was shipped to my office to inspect it afterwards.
Q. All right. And why did you then ship it to Andy Irwin?
A. Well, that was based on your request and my understanding that Mr. Irwin needed to inspect that as

0209

well.
Q. Was Mr. Irwin present at the January 25th, 2012 inspection of the Greyhound coaches in Richmond, Virginia?
A. Yes.
Q. And what was the total cost of shipment from your office to Mr. Irwin's office?
A. It looks like it's 71.46.
Q. $71.46?
A. Right.
Q. All right. Thank you, sir.
MR. HAYNES: Are you through or --
MS. DORMAN: I'm just looking.

THE WITNESS: Attorneys are never really through.
MS. DORMAN: We'll reserve the rest of our questions.
(Reporter's time: 3:38 p.m.)
EXAMINATION
BY MR. HAYNES:
Q. During any of the testing that -- that you have performed, have you observed the type of -- I think what you call it oscillating tire marks at the accident site?
A. No.

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Q. Have you ever seen those other than at this accident site?
A. I would say the tire marks that were created during the January Americanos testing are also markedly different from the crash scene tire marks.
MR. HAYNES: Object, nonresponsive.
Q. (BY MR. HAYNES) I'm going to ask you about that.
A. Okay.
Q. But first I'm asking you whether during your career you've ever seen any other tire marks like what you were calling the oscillating tire marks seen at this accident site?
A. Well, certainly I've seen oscillating tire marks in heavy truck crashes or heavy truck investigations. Sometimes there's a brake induced oscillation meaning the truck is lightly loaded and the operator applies the brakes very heavily and you get kind of a tramp motion, that's actually the motion that the describes -- the term that describes the motion of the axle. You get what's called the tramp motion of the rear axle and that will create an oscillating tire mark as well.
That comes to mind. I've certainly seen that. I wouldn't say that that's exactly like what

0211

we've got in this subject crash, but I've certainly seen oscillating marks of that nature.
Q. Okay. The ones that you're thinking of and then you just described, are you saying that they're basically the same thing as what we see at this accident site or it's just something that you can call to mind that's somewhat similar?
A. I'd say it's more your second description there. Although with the heavy braking that's done toward the end of those marks like we discussed, part of that oscillation, I believe, is due to the drive shaft imbalance. Part of it can also be from the heavy brake application.
Q. Okay. Now I'm going to ask you about a question you answered a moment ago. Do you have an

opinion whether any of the tire marks that you've seen from Americanos's Uvalde testing are similar or substantially similar to the tire marks seen at the accident site in terms of the vibrating or oscillating tag tire marks?

A. I think they're not similar. I think they're considerably different.

Q. Why do you say that?

A. Well, the -- the marks that you see in the Uvalde testing, the Americanos Uvalde testing include

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both tag axle tires oscillating on the roadway. And if you look at the crash site photos you'll see that the dual axle -- the drive axle tires are the ones that are creating the distinct oscillation marks on the roadway.

The tire marks created in the Americanos Uvalde testing are not from the correct tires, the oscillating marks. And then in addition you have both tires creating a mark at the same time the general path of those tire marks is not consistent with what you see in the crash scene, meaning the crash scene we've got a simple yaw to the right whereas in the Americanos testing you've got kind of a more waving wandering path of the vehicle. You can see it's not a simple arc. It's more of a wandering path of the vehicle.

In the Americanos testing you also have continuation of those tire marks from the inception basically all the way to the coach's point of rest. In the subject crash we have a fairly brief area or fairly brief period of time where we get these marks that I'm calling the oscillating tire marks. It does not start in the beginning of the crash and go all the way to the point of resting of the coach.

So there's a difference in which tires are creating the mark, the character of the mark, the length of the mark. That's what comes to mind at this point.

0213

Q. What do you attribute the -- if I'm understanding you right, you're saying that at the accident site, the oscillating tire marks are not that long and they're -- there are some and then there's no oscillating marks and then there's some more oscillating marks; is that right?

A. I think in general terms, right. They don't go from beginning to end of the tire marks whereas in the Uvalde test, once -- once Mr. Yohe applies the brakes and gets those tires to turn, they oscillate and they stay in that position from inception to the rest position.

Q. In talking about the oscillating tire marks at the accident site, what do you attribute them to in terms of why they don't go from beginning to end?

A. Well, in simple terms I don't think the tires have dynamically steered over as -- as I understand the

Americanos theory to be. The -- had the tires steered over and she's applying the brakes throughout the sequence, then you'd expect more tire marks like Mr. Yohe's tire marks and you'd expect both left tag tire mark and right tag tire mark.

I'm not sure if I answered your question or if I got off on a tangent there so.

Q. Well, I think -- I think you answered the

0214

general question. I was asking more about -- you were explaining -- I think you just kind of answered why the tire marks are the way they are at the Uvalde testing in your opinion, but I was asking for your opinion about why they are the way they are at the accident site?

A. Well, the -- the oscillation, I think, is due to a combination of two factors. One of them is the application of the brakes and I think that's probably a lesser factor and then the second one is the -- the imbalance and the rotation of the drive shaft that's still attached to the drive axle or to the differential.

So that creates an oscillating motion of the drive axle and that's what creates the oscillating motion of the drive tires. That mark begins oscillating and then the oscillating ends because we've got a change in the braking of the tires. So toward the end of that oscillating tire mark, as she applied more and more brakes, the rotational motion of the drive shaft starts to diminish. Basically, as she's slowing down those tires, the differential slowing down the drive shaft rotation is slowing down. So you get less and less oscillation, and then it kind of gives away to a braking tire mark. So there's kind of a smooth transition there from a heavily oscillating tire or pair of tire marks.

Q. Or she's not braking as hard to where --

0215

A. Correct.

Q. She's braking harder as the motor coach is heading onto the right shoulder and there's less rotation of the drive shaft, is that what you're saying?

A. Right. As you look at the end of those tire marks you can see that virtually all of the oscillation ceases at that point and it gives away to a more of a traditional braking mark with longitudinal striations. And then subsequent to that, apparently the brakes are -- are either released or reduced and -- and that mark kind of ceases.

Q. Okay. Thank you. I appreciate it.

A. Thank you.

MS. DORMAN: You're done.

(Deposition concludes at 3:47 p.m.)

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CHANGES AND SIGNATURE

WITNESS NAME: KEVAN GRANAT

DATE OF DEPOSITION: MARCH 22, 2012

PAGE	LINE	CHANGE	REASON

0217

_____

_____

I, KEVAN GRANAT, have read the foregoing deposition and hereby affix my signature that same is true and correct, except as noted above.

_____

KEVAN GRANAT

THE STATE OF _____)

COUNTY OF _____)

Before me, _____, on this day personally appeared KEVAN GRANAT, known to me (or proved to me under oath or through _____) (description of identity card or other document) to be the person whose name is subscribed to the foregoing instrument and acknowledged to me that they executed the same for the purposes and consideration therein expressed.

Given under my hand and seal of office this

_____ day of _____, _____.

_____
NOTARY PUBLIC IN AND FOR
THE STATE OF _____
COMMISSION EXPIRES: _____

0218

NO. 2010-03-1717-C

DANIEL CAMPOS, ET AL,	)	IN THE DISTRICT COURT
Plaintiffs	)	
VS.	)	
	)	197TH JUDICIAL DISTRICT
AMERICANOS, U.S.A., L.L.C., ET AL,	)	
Defendants	)	CAMERON COUNTY, TEXAS

REPORTER'S CERTIFICATION
DEPOSITION OF KEVAN GRANAT
VOLUME 2
MARCH 22, 2012

I, STEFANIE COX, Certified Shorthand Reporter in and for the State of Texas, hereby certify to the following:

That the witness, KEVAN GRANAT, was duly sworn by the officer and that the transcript of the oral deposition is a true record of the testimony given by the witness;

That the deposition transcript was submitted on _____ to the attorney for Defendant,

0219

Motor Coach Industries and MCI Service Parts, Ms. Melissa Dorman, for examination, signature and return to me by _____;

That the amount of time used by each party at the deposition is as follows:

Ms. Melissa Dorman - 00 HOURS:08 MINUTE(S)
Mr. Stephen C. Haynes - 01 HOUR(S):29 MINUTE(S)

Ms. Tamara L. Rodriguez - 03 HOURS:18 MINUTE(S)
Mr. Justin Hill - 00 HOURS:00 MINUTE(S)

That pursuant to information given to the deposition officer at the time said testimony was taken, the following includes counsel for all parties of record:

Ms. Melissa Dorman and Mr. Stephen C. Haynes, Attorneys for Defendant, Motor Coach Industries and MCI Service Parts;

Ms. Tamara L. Rodriguez, Attorney for Defendant, Americanos, U.S.A., L.L.C., et al.;

Mr. Justin Hill, Attorney for Consolidated Plaintiffs;

Mr. Eric Green, Attorney for Defendant;

I further certify that I am neither counsel for, related to, nor employed by any of the parties or attorneys in the action in which this proceeding was taken, and further that I am not financially or otherwise interested in the outcome of the action.

Further certification requirements pursuant to Rule 203 of TRCP will be certified to after they have occurred.

Certified to by me this 3rd of March, 2012.

_____

STEFANIE COX, Texas CSR 5384
Expiration Date: 12/31/13
Firm Registration No. 60
COMPEX LEGAL SERVICES
11811 North Freeway
Suite 500
Houston, Texas 77060
(800) 969-6424

FURTHER CERTIFICATION UNDER RULE 203 TRCP

The original deposition was/was not returned to the deposition officer on _____;

If returned, the attached Changes and Signature page contains any changes and the reasons therefor;

If returned, the original deposition was delivered to Ms. Tamara L. Rodriguez, Custodial Attorney;

That $_____ is the deposition officer's charges to the Defendant, Americanos USA, L.L.C., for preparing the original deposition transcript and any copies of exhibits;

That the deposition was delivered in accordance with Rule 203.3, and that a copy of this certificate was served on all parties shown herein on and filed with the Clerk.

Certified to by me this _____ day of _____, 2012.

_____

STEFANIE COX, Texas CSR 5384
Expiration Date: 12/31/13
Firm Registration No. 60
COMPEX LEGAL SERVICES
11811 North Freeway
Suite 500
Houston, Texas 77060
(800) 969-6424

PE12-007

MCI

4-27-2012

Response 9

Rucoba, Robert

CARR ENGINEERING, INC.
12500 Castlebridge Drive
Houston, Texas 77065-4532
Telephone: 281/894-8955
Fax: 281/894-5455

February 15, 2012

Ms. Melissa Dorman
Hartline Dacus Barger Dreyer LLP
6688 North Central Expressway
Suite 1000
Dallas, TX 75206

Re: [redacted] v. Americanos, U.S.A. L.L.C. et. al.

Dear Ms. Dorman:

I provided an initial report that summarized my opinions in this matter as of August 11, 2011. Since the writing of that report, the attached list of materials has been analyzed. Of particular interest were the depositions of the various experts and the supplemental reports by Americanos' experts Aaron Jones, Thomas Fugger and Lawrence Yohe. Messrs. Jones, Fugger and Yohe provided supplemental opinions related to exemplar bus testing and several exemplar buses that had experienced driveshaft failures allegedly similar to the crash–involved bus. The opinions expressed in my initial report have not been changed and/or modified. However, the additional opinions that have been reached as a result of my review of the new materials are as follows:

Unit 6352

1. This was a 2000 MCI model 102DL3 that allegedly experienced a driveshaft failure similar to the [redacted] bus. Unit 6352 was involved in a crash on the Pennsylvania Turnpike on August 13, 2011. I have analyzed the police report and news video/photos/articles. The crash occurred as the bus was traveling westbound on the Pennsylvania Turnpike in Lancaster County, PA. 18 passengers were onboard. In the area of the crash, the highway is a four lane paved asphalt roadway with improved, paved shoulders. The westbound and eastbound lanes are divided by a concrete median barrier. The posted speed limit is 65 miles per hour. The police report indicates that at the time of the crash the roadway surface was "dry", the weather conditions were "no adverse conditions" and the illumination was "daylight". The road is downhill and curves to the right in the westbound direction. To the north of the pavement lies an earthen embankment.

2. According to the police information, the bus was "traveling westbound in the left lane. The driver lost control and struck the Jersey Barrier." The bus then traveled along the barrier for approximately 432 feet, turned to the right and traveled across both westbound travel lanes. The bus subsequently collided with the earthen embankment on the north side of the highway. The embankment impact caused the bus to overturn driver's side leading. The bus continued sliding and spinning in the clockwise direction while on its driver's side and roof. The bus came to rest on its driver's side in the westbound travel lanes with its front end pointing towards the east. The investigating officer found the "Prime Factor Driver Action" to be "driver was distracted".

3. The police drawing indicates that the first sign of physical evidence was the point of impact between the bus and the concrete median barrier. The police did not find any bus components or bus pieces preceding the barrier impact. The police report indicates that the "drive axle (sic) also became separated and was found underneath the bus after the bus had been uprighted."

4. The crash scene was inspected on February 1, 2012. To date, limited information has been provided in the area of the initial barrier contact. According to a Pennsylvania Turnpike representative, there were no tire marks on the roadway leading up to the initial contact with the median barrier. The representative also indicated that the bus's impact with the concrete median barrier was of a large enough magnitude that it required the damaged barrier sections to be replaced. At the time of the scene inspection, two new sections of concrete were visible in the barrier wall. The limited news coverage documented the bus's path as it traveled post-impact with the barrier. The bus traveled across the westbound lanes, slammed into the earthen embankment and slid/spun to its point of rest. A single tire mark was found which lead up to a "scar" in the earthen embankment created by the bus's front end. Various bus pieces and glass fragments were found on the side of the embankment. The news photographs/video footage was used to locate the point of the rest of the bus.

5. The crash bus was inspected on January 25, 2012. Based on the layout of the highway, it is likely that the left front wheel first collided with the barrier. Concrete residue was found on the ends of the left front lug nuts. The impact forces caused the bus to rotate abruptly in the clockwise direction. This caused the left side of the tag and drive axle wheels to slam into the vertical face of the barrier. Examination of the undercarriage revealed that the secondary impact with the barrier caused the entire tag axle to be shifted substantially from left to right. This lateral shift was found to be approximately 4.5" in the static state. The upper and lower radius rods were buckled on the left and right side. The lateral movement of the tag axle was large enough such that the tag axle pass through came into contact with the transmission/driveshaft universal joint and pinned it against the inner surface of the pass through. This pinning action of the universal joint literally tore the universal joint apart freeing the transmission end of the driveshaft. Once the driveshaft end was free to rotate, it contacted the tie rod and tag axle locking plates and disabled the tag axle locking mechanism. The lateral displacement of the tag axle from left to right, resulting in moving the tag axle locking cylinder and locking plates closer to the centerline of the coach and thus closer to the flailing end of the driveshaft.

The tag axle caster latch arm was found castered forward which is improperly positioned for forward travel. No evidence of direct contact was noted on the latch arm assembly. Based on the absence of direct contact, a likely reason for the latch arm assembly to be mispositioned is due to the huge amount of lateral displacement in the tag axle and the deformed suspension components.

The driveshaft was found completely separated from the bus. Both ears on the transmission side yoke were broken in half. Notably absent were the circumferential scratches on the exterior of the driveshaft near the differential connection. The presence of those scratches indicates that the driveshaft is rotating while in contact with the loop for an extended period of time. The absence of those scratches indicates that the driveshaft did not rotate a substantial amount prior to getting torn free from the bus.

Numerous scratches were found on the bus's exterior along the driver's side and roof. The scratches indicated that the bus initially rolled onto its driver's side and then rolled onto its roof while positioned on the embankment. The bus slid on its roof backwards while in contact with the embankment before eventually sliding/spinning back into the westbound travel lanes. It rolled back onto its driver's side prior to coming to rest.

Dirt and grass were found imbedded in the front face and under the front bumper of the bus. The presence of the dirt/grass across the front end of the bus indicated that the bus was upright when it collided with the earthen embankment.

The bus was inspected for mechanical problems that could have caused or contributed to the crash. No problems were found.

6. Based on my reconstruction to date, I have determined that that the Pennsylvania Unit 6352 bus crash is not substantially similar to the [redacted] bus crash. Although each crash involves the same model MCI bus and both buses had separated driveshafts, the crashes are significantly different in the following ways:

   - In the Pennsylvania crash the loss of control was likely due to driver distraction. The driver failed to steer or brake his bus before colliding with the barrier. The cause of the loss of control in the [redacted] crash was due to the bus driver steering and braking in response to a mechanical failure.
   - In the Pennsylvania crash there was no physical evidence from the bus prior to the barrier impact. In the Pennsylvania crash there were no driveshaft components or tire marks left on the roadway prior to the loss of control and barrier collision. In the [redacted] crash, the police found pieces from the driveshaft universal joint prior to the loss of control and distinctive tire marks created once the driveshaft was disconnected on one end.
   - In the Pennsylvania crash, the driveshaft universal joint was torn apart because the tag axle was pushed laterally to the point where it impacted/impinged and then stopped the rotating universal joint. In the [redacted] crash the universal joint failed due to the improper maintenance and it was not an impact induced failure. In the [redacted] crash, the lateral movement of the tag axle was essentially negligible.

- In the Pennsylvania crash, the bus's driveshaft did not have the circumferential scratches on the exterior of the driveshaft near the differential connection. The absence of those scratches indicates that the driveshaft did not rotate a substantial amount prior to getting torn free from the bus. In the [redacted] crash, the driveshaft had numerous scratches around the circumference. This was indicative of the driveshaft rotating for an extended period of time while in contact with the loop.
- In the Pennsylvania crash, the bus was caused to overturn due to the impact forces from the bus slamming into the embankment, front end leading. Those impact forces literally caused the bus to enter into a sudden clockwise rotation which overcame the stability of the bus. In the [redacted] crash, the bus was caused to overturn due a combination of steering and braking forces which ultimately got the bus sliding sideways and furrowing into the earth. The [redacted] bus rollover was a steering/braking induced rollover not an impact induced rollover.

Unit 6468

1. This was a 2000 MCI model 102DL3 that allegedly experienced a driveshaft failure similar to the [redacted] bus. Based on the information that has been provided to date, this bus was not involved in a crash. Per Aaron Jones, this bus had been recently refurbished.

2. The bus was inspected on January 25, 2012. Examination of the undercarriage revealed that the driveshaft experienced a universal joint separation at the transmission connection. There were numerous impact marks on the tag axle pass through. There were also some contact marks on the upper tag axle locking plate. The tie rod locking plate and locking pin had been displaced forward, but the tag axle lock assembly was still locked in place.

   The tag axle caster latch arm was found properly positioned for forward travel. (In Aaron Jones' report he noted that the tag axle caster latch arm was "displaced from its correct position for forward driving". This comment disagrees with my findings and what is shown in Jones' inspection photographs.)

   The driveshaft was not available for inspection. Photographs of the driveshaft indicate that both ears on the transmission side yoke were broken in half. Circumferential scratches were present on the exterior of the driveshaft near the differential connection. The presence of those scratches indicates that the driveshaft was rotating while in contact with the loop for an extended period of time. At this time the cause of the driveshaft universal joint failure is unknown.

3. Based on my analysis to date, I have determined that the Unit 6468 bus incident is not substantially similar to the [redacted] bus. Although each case study involves the same model MCI bus and both buses had separated driveshafts, the evidence in both cases is significantly different in the following ways:

- Based on the information that has been provided and my inspection of Unit 6468, it does not appear that the Unit 6468 bus driver ever lost control of the bus. Unlike the crash-involved [redacted] bus, Unit 6468 was not involved in any type of loss of control or rollover crash. It is worthwhile noting that Unit 6468 case study shows that even in the presence of a failed driveshaft, a driver is able to maintain control of an MCI model 102DL3.
- The tag axle lock assembly for Unit 6468 never became unlocked under any condition during the incident. In the [redacted] crash, the tag axle was found in the unlocked position at the bus's point of rest.
- The tag axle caster latch arm for Unit 6468 was found properly positioned for forward travel. In the [redacted] crash, the tag axle latch arm was found to be mispositioned for forward travel at the bus's point of rest while the bus was laying on its side.

Unit 6934

1. This was a 2000 MCI model 102DL3 that allegedly experienced a driveshaft failure similar to the [redacted] bus. Based on the information that has been provided to date, this bus was not involved in a crash. Per Aaron Jones, this bus had been recently refurbished.

2. The bus was inspected on January 25, 2012. Examination of the undercarriage revealed that the driveshaft experienced a universal joint separation at the transmission connection. There were numerous impact marks on the tag axle pass through. The tag axle locking plates were found unbolted from the bus. Both plates were bent downward. To date, there has not been enough information provided to determine if the tag axle became unlocked during the incident.

   The tie rod was found in the interior of the bus. The tie rod was bent and there was a gouge mark in the tie rod at the location of the maximum bend.

   The tag axle caster latch arm was found properly positioned for forward travel.

   The driveshaft was not available for inspection. At this time the cause of the driveshaft universal joint failure is unknown.

   The transmission housing was cracked. Several pieces were found in the interior of the bus.

3. Based on my analysis to date, I have determined that the Unit 6934 bus incident is not substantially similar to the [redacted] bus. Although each case study involves the same model MCI bus and both buses had separated driveshafts, the evidence in both cases is significantly different in the following ways:

   - Based on the information that has been provided and my inspection of Unit 6934, it does not appear that the Unit 6934 bus driver ever lost control of the bus. Unlike the crash-involved [redacted] bus, Unit 6934 was not involved in any type of loss of control or rollover crash. It is worthwhile noting that Unit 6934 case study shows that even in the presence of a failed driveshaft (and possibly an unlocked tag axle lock cylinder), a driver is able to maintain control of an MCI model 102DL3.

- Based on the information to date, it cannot be determined if the tag axle locking cylinder for Unit 6934 ever became unlocked under any condition during the incident. In the [redacted] crash, the tag axle was found in the unlocked position at the bus's point of rest.
- The Unit 6934 tag axle caster latch arm was found properly positioned for forward travel. In the [redacted] crash, the tag axle latch arm was found to be mispositioned for forward travel.

Unit 60628

1. This was an MCI model 102DL3 that was used in several tests performed by Americanos' experts.

2. In June 2011, Unit 60628 was initially used by Americanos' experts in driving demonstrations at the Bosch Proving Grounds.

3. On August 25, 2011 and September 9, 2011, Unit 60628 was used by Americanos' experts to demonstrate a "newly designed" driveshaft guard. The experts intentionally caused the driveshaft universal joint to detach at the transmission connection. According to Aaron Jones' report, in the August 2011 test the "tag axle castered forward after being impacted with the driveshaft". The tests were videotaped and "Video 12" and "Video 15" were submitted as part of that testing. To date, Video 1 to Video 11, Video 13 and Video 14 have not been submitted for review nor have the driveshafts from those tests.

4. On September 20, 2011, Unit 60628 was used by Americanos' experts in a driveshaft test. The experts intentionally caused the driveshaft universal joint to detach at the transmission connection. According to Aaron Jones' report, prior to the start of this test the "tag axle caster lock assembly had been damaged and the axle was castered forward". That test was videotaped and high speed and regular speed camera views have been submitted.

5. The bus and the 9/20 driveshaft were inspected on January 24, 2012. Examination of the undercarriage revealed that the driveshaft made numerous contacts inside and around the exterior of the tag axle pass through and tie rod. The tag axle locking cylinder had been unlocked such that the locking plates were separated from the tie rod plate and the locking plates were bent upwards.

6. The driveshaft was found completely separated from the bus. Both ears on the transmission side yoke were broken in half. Circumferential scratches were present on the exterior of the driveshaft near the differential connection. The presence of those scratches indicates that the driveshaft was rotating while in contact with the loop for an extended period of time.

7. One of Jones' main conclusions from the August/September driveshaft testing with the secondary guard was that "the testing also shows that the flailing driveshaft impacts the tag axle support structure and can cause unlatching of the tag axle caster mechanism." While that may state an accurate result from the Americanos test, this result was created under artificial conditions. By placing a secondary guard near the transmission end of a flailing driveshaft the second loop artificially causes the driveshaft to remain positioned up near the latch arm assembly thereby increasing the opportunity to strike the latch arm assembly. Indeed, the tag axle caster mechanism was so extensively damaged during the Americanos testing with the secondary guard that the mechanism wasn't functional when Americanos conducted testing in the coach's as-designed condition. The Americanos driveshaft tests were never able to replicate the tag axle caster mechanism being knocked out of position in the MCI as-designed condition (absent a secondary guard).

Unit 60624

1. This was an MCI model 102DL3 that was used in several driving tests performed by Americanos' experts.

2. On January 13 and 14, 2012, Unit 60624 was tested by Americanos' experts in two circle tests and eleven braking tests. The tests were documented with instrumentation, videotapes and digital photographs. The bus was modified with a pneumatic actuator to apply steering to the tag axle.

3. I have not had time or opportunity to fully analyze the Americanos test data. However, there are a few opinions that I have reached based on my limited review of the test data.

    - The initial theory put forth by Americanos' experts was that once the driveshaft/transmission universal joint failed, the flailing driveshaft (1) struck the tie rod and (2) unlocked the tag axle lock cylinder causing the tag axle to turn to the left which caused the bus to enter into a right turn. The defense experts refuted this theory by analyzing the flaws in the Americanos testing which "supported" this initial theory. Defense experts also provided their own testing which showed that the bus was indeed controllable and provided a margin of safety in the event of a tag axle unlocking. This most recent round of Americanos testing refutes the Americanos initial theory and replicates the findings in the defendant's initial bus testing. Americanos tests #5, #6, and #7 were all performed with the tag axle unlocked. The Americanos testing clearly demonstrates that when the tag axle is unlocked under driving conditions, the bus is controllable and can be safely brought to a stop.

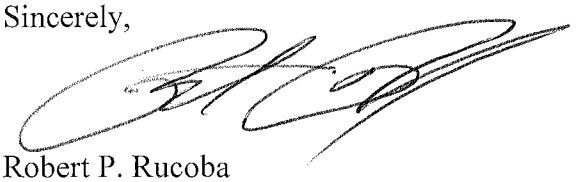
- The newest theory recently put forth by the Americanos experts is that once the driveshaft/transmission universal joint failed the flailing driveshaft (1) struck the tie rod and (2) unlocked the tag axle lock cylinder and (3) also struck the tag axle caster mechanism and (4) unlocked the mechanism which caused it to be mispositioned to a position that is designed for rearward travel. The Americanos theory is that these two tandem events caused the bus to "veer relatively sharply to the right" and ultimately caused the bus driver to lose control. The testing that comes closest to replicating their theory are Americanos tests #9, #12, and #13 which were all performed with the tag axle unlocked and the tag axle caster mechanism mispositioned as the test driver applied braking. What is consistent in those three Americanos tests is that during the braking phase there are simultaneous brake marks being created on the pavement by the left and right side tires. The left and right side tire marks begin and end at approximately the same points on the road. The analysis of the braking marks in the [redacted] crash shows uneven side-to-side brake mark creation. Most notably, in the initial braking phase of the [redacted] crash, the right rear tag axle and the right front tire were creating tire marks and none of the left side tires were creating tire marks. This brake imbalance is what ultimately caused the bus to the move to the right and the driver to overcorrect. The Americanos testing shows that even when the bus is placed under their theoretical conditions, if the brake system is properly "balanced" the bus does not deviate from the lane of travel under hard braking while the bus is traveling at highway speeds.

- Another opinion that can be made about Americanos tests #9, #12, and #13 has to do with controllability. Even with the tag axle unlocked and the tag axle caster mechanism mispositioned, the Americanos test driver was able to maintain control and bring the bus to a controlled stop. In tests #9 and #12, the bus driver was able to keep the bus in the initial lane of travel and stop primarily in its initial lane of travel. In test #13, the bus exited the left side of the travel lane near the end of the test but it still came to rest on pavement. Even if one were to extrapolate the final rest position of test bus #13 to the [redacted] scene, test bus #13 would have still come to rest primarily on the pavement.

As stated in my first report and in my deposition, the cause of the [redacted] crash was due to driver error combined with an improperly maintained bus. The precipitating event was the failure of the transmission/driveshaft universal joint. The bus driver responded to the driveshaft universal joint failure by steering and braking her vehicle into a right turn. After the driver steered her vehicle onto the paved shoulder she overcorrected back to the left. Americanos experts Larry Yohe, Thomas Fugger and Ricardo Palacios have also concluded that the bus is placed in a left turn due to steering inputs by the bus driver. All experts have concluded that no amount of change in the suspension components will cause the bus to transition from a right turn to a left turn in the absence of driver steer inputs. The transition from right turn to left turn must be initiated by driver input. The reentry path confirms that driver steered her vehicle abruptly rather than remaining in the shoulder and slowing her vehicle down in a controlled manner. There were no obstacles or obstructions which would have prevented the driver from staying on the paved shoulder and stopping her vehicle.

All of the opinions in this report are expressed with a reasonable degree of engineering certainty. It is my understanding that there has recently been produced Americanos test footage and data. I reserve the right to supplement or modify my opinions once this new information is received or in response to the work and opinions of opposing experts.

Sincerely,



Robert P. Rucoba

Attachment A – File Materials

- CD containing: Documents produced by Americanos, Documents produced by MCI, Vehicle photographs
- Greg Wright Inspection photographs 06/30/11
- Boroscope Pictures
- David Coates Inspection photographs 07/20/11
- Sensor Tester Results
- CD containing: Vehicle Inspection photographs and videos 06/3011 and 07/01/11
- Depositions: [redacted]
- Bosch Test Track Chart
- CD's containing: Documents produced by Americano's, Scene Inspection photographs, Vehicle Inspection photographs by K. Granat, Testing produced by MCI
- Protective Order
- CD's containing: Bus and Bus Part Inspection 06/30/11
- CD containing: Def. [redacted] second supplemental responses to Motor Coach Industries, Inc.'s first request for production, Def. [redacted] first supplemental responses to Plaintiff's first request for production, Def. [redacted] U.S.A., LLC's second supplemental responses to Motor Coach Industries, Inc.'s first request for production, Def. [redacted] U.S.A., LLC's first supplemental responses to Plaintiff's first request for production, Def. Irman Morado's first supplemental responses to Plaintiff's first request for production
- Vehicle part photographs
- DPS Inspection File Records
- CD's containing: Fugger Raw Data

- Plaintiff's cross-notice of intention to take Depo of Bob Rucoba 09/21/11
- Exhibits to Officer Keith Olive's Depo
- Report by Raul Longoria
- Report on Simulations by Raul Longoria
- Raul Longoria's File Materials
- Exhibits to J. Barta's Depo
- Report & CV by Virgil Hoogestraat
- Report by Kevan J. Granat
- Report by Gregory Wright
- Report by Patrick Mears
- Accident Scene photos
- Correspondence File of Frank Brown
- CD's containing: Exhibits to Andrew Irwin's Depo, Report & CV by Frank Brown, File Materials by Larry Yohe
- Vehicle Inspection photos by Aaron Jones
- CD's containing: Vehicle Inspection photographs
- Meritor Axle CAD Model
- Exhibits to Thomas Fugger's Depo
- Exhibits to Ricardo Palacios' Depo
- GLI Test Coach Inspection photos
- CD containing: 1995 MCI Tag Axle Steering Testing
- Tag axle lab test data
- Download: Exhibits to Glen Reuschling's Depo
- Video Drivesaft Test
- CD containing: Driveshaft Testing
- Exhibits to Hoogestraat's Depo
- CD containing: Exhibits to Virgil Hoogestraat Vol. 3 Depo
- Download: Video Driveshaft Test and Jones photographs
- Download: Vehicle Inspection photographs, Campos MSI Jan 13-14-2011, Campos protocol photographs 6-3-2011, Inspection 6-30--7-1-2011 MSI-6-30-2011
- Photographs of U-Joint artifacts transfered to Gary
- CD containing: Video of Driveshaft Test 09/22/11, Aaron Jones Photos 09/20/11
- Errata Sheet of Leon Feazell's Depo
- Downolad: U-Joint Artifacts Inspection photographs by Gary Fowler
- CD's containing: Exhibits to Bob Rucoba's Depo
- CD's containing: Aaron Jones File Materials and photos
- Errata Sheet for Raul Longoria's Depo
- Errata sheet for Thomas Fugger's Depo
- CD containing: G. Reuschling TranCon Photographs, Exhibits to Kevin Granat's Depo
- CD containing: Documents by Americanos AUSA010718-AUSA011272
- Exhibits to Virigl Hoogestraat's Depo
- Accident Reports
- Exhibits to Herrera's Depo
- Errata Sheet to Frank Brown's Depo,
- Errata Sheet to Lawrence Yohe's Depo
- Pennsylvania Police Report

- News Video of Accident Scene
- CD containing: Vehicle Inspection photographs by Aaron Jones, Greyhounds Driveshaft Testing Videos
- Supplemental Report by Lawrence Yohe
- Supplemental Report by Thomas F. Fugger, Jr., P.E.
- Supplemental Report by Aaron J. Jones, P.E.
- Americanos USA, LLC, Greyhound Lines, Inc. and Irma Morado's sixteenth supplemental responses to Plaintiff's and intervenor's requests for disclosure and second supplemental designation of expert witnesses
- Vehicle purchase and Maintenance Records
- First amended scheduling order
- CD containing: Vehicle Inspection photographs
- Vehicle Maintenance Records
- CD's containing: GLI Bus Inspection photographs and notes by Dr. David Coats, GLI Bus Inspection photographs and notes by Kevan Granat
- Tests run configurations
- Videos: Vbox Tests
- 4 CDs labeled AUSA 011756,57,58 and Test 10 Disk 3
- GLI 6468 driveshaft photographs
- Americanos Supplementary Discovery Responses
- Loop install documents
- Tag axle suspension drawing
- Lock cylinder assembly drawing

DOCUMENTS REVIEWED – DR. DAVID COATES

1. Accident Report by TX DPS Trooper Kellert (Campos Plaintiffs 252808-000540)
2. MCI000001-001211
3. MCI000469-000470
4. AUSA002861-AUSA002880
5. P000367-P000372
6. Scheduling Order
7. Plaintiff's Designation of Expert Witnesses
8. MCI Standard 25-24-0001 (Raw Material Standard – Raw Material Selection – Steel Products)
9. Steel Stainless – AISI 304, UNS S30400
10. Bosch Test Track
11. Brian Lawson Notes
12. Reduced Scale Drawing
13. MSi Reports
14. Photographs - 316 photographs of scene and coach produced by [redacted] in response to Plaintiff's Request for Production dated June 17, 2010 (photos taken January 14, 2007, January 15, 2007, March 16-17, 2010, and April 26, 2010 ARAAC)
15. Photographs - 83 photographs of scene produced by [redacted] in response to Plaintiff Request for Production dated June 17, 2010
16. Photographs – 48 photographs of coach taken 06/22/10 produced by [redacted] on 07/23/10
17. Photographs – Campbellton Photos from DPS Evidence Inspection
18. Photographs – Campbellton DPS Evidence Inspection
19. Photographs - Bob Rucoba's Inspection Photos taken 07/27/10
20. Photographs - Campbellton Inspection –Photo No. L1010152 (from Photos of Items Collected by GLI Investigator at Scene)

21. October 26, 2010 letter from [redacted] counsel regarding additional protocols for destructive testing and advising that they are no longer going to be doing the alignment testing, paragraphs 1-5 of the protocol entitled "Protocol for Examination of the Subject Coach."

22. [redacted] July 2007 Transmission Change – Driveline Removal

23. 102DL3 Maintenance Manual Regarding Removal of Driveshaft

24. November 1, 2010 letter from Americanos' counsel regarding this week's inspection and testing

25. Drawing – 141-1-71_k_1 of 1 – yoke half round end

26. Deposition transcript and exhibits for: Trooper Wesley Cooper

27. Defendant [redacted] [redacted]s Responses to Motor Coach Industries, Inc.'s First Request for Production

28. Defendant [redacted].'s Responses to Motor Coach Industries, Inc.'s First Set of Interrogatories

29. Defendant [redacted]s Responses to Motor Coach Industries, Inc.'s First Request for Production

30. Defendant [redacted]s Responses to Motor Coach Industries, Inc.'s First Set of Interrogatories

31. Bob Rucoba's 08-02-11 Exemplar Vehicle Inspection Photos

32. Photos of the June 30, 2011 Bus Inspection which we received from counsel for Stewart & Stevenson Truck Holding, LLC d/b/a On the Border Freightliner of El Paso; and

33. Photos of the Bus Parts Inspection taken on June 30, 2011 which we received from counsel for Stewart & Stevenson Truck Holding, LLC d/b/a On the Border Freightliner of El Paso

34. Protective Order signed by all counsel on 07-16-10

35. DPS Inspection File for [redacted]

36. [redacted] 2nd Supplemental Responses to MCI's 1st Request for Production

37. [redacted] 1st Supplemental Response to MCI's Request for Production

38. [redacted] 1st Supplemental Response to Perez Request for Production

39. [redacted] 1st Supplemental Responses to Perez Request for Production

40. [redacted] 1st Supplemental Responses to Perez Request for Production

41. [redacted] 1st Supplemental Objections/Responses to Medina, Medina & Bandala's Request for Production

42. [redacted] 1st Supplemental Objections/Responses to Medina, Medina, Bandala's Request for Production

43. [redacted] 1st Supplemental Objections/Responses to Medina, Medina, Bandala's Request for Production

44. [redacted] 1st Supplemental Objections/Responses to Garcia & Dominguez Requests for Production

45. [redacted] 10th Supplemental Objections/Responses to Campos Request for Production

46. [redacted] 1st Supplemental Objections/Responses to Campos Request for Production

47. [redacted] 2nd Supplemental Objections/Responses to Campos Request for Production

48. [redacted] 1st Supplemental Responses to Herrejon's Request for Production

49. [redacted] 1st Supplemental Responses to Herrejon's Request for Production

50. [redacted] 1st Supplemental Responses to Herrejon's Request for Production

51. [redacted] 2nd Supplemental Responses/Objections to ArvinMeritor Request for Production

52. [redacted] 1st Supplemental Responses to Garcia Request for Production

53. [redacted] 1st Supplemental Responses to Garcia Request for Production

54. [redacted] 1st Supplemental Responses to Garcia Request for Production

55. [redacted] 1st Supplemental Responses to Aguilar Request for Production

56. [redacted] 1st Supplemental Responses to Aguilar Request for Production

57. [redacted] 1st Supplemental Responses to Aguilar Request for Production

58. Photographs of Coach at Jeff's Auto Rebuilders

59. October 14, 2011 Deposition Transcript and Exhibits of Kevan Granat

60. Defendant [redacted] 2nd Amended Notice of Intention to Take Oral Deposition of David Coates and Subpoena Duces Tecum

61. AUSA010717 - Video Driveshaft Test & Jones Photos 09-20-11

62. AUSA011583 - Video Driveshaft Failure w-o Loop

63. Video 12.wmv

64. Video 15.wmv

65. 100ND70S - unit 6352

66. 1016468_ - unit 6468

67. 1026934_ - unit 6934

68. 1036132_ - unit 6132 turning angle measurement

69. Aaron Jones' September 20, 2011 Photos

70. Aaron Jones' Deposition Exhibit 7

71. Aaron Jones' Deposition Exhibit 8

72. Aaron Jones' Deposition Exhibit 9

73. Aaron Jones' Deposition Exhibit 13

74. Larry Yohe's January 15, 2012 Supplemental Expert Report

75. Thomas Fugger's January 16, 2012 Supplemental Expert Report

76. Aaron Jones' January 16, 2012 Supplemental Expert Report

77. Attachments produced with [redacted] Sixteenth Supplemental Response to Plaintiffs' and Intervenors' Request for Disclosure and Second Supplemental Expert Designation (*Not Bates Labeled*)

78. AUSA011639 – AUSA011755

79. AUSA011600 – AUSA011613

80. Kevan Granat's January 24-25, 2012 Nappanee and Richmond Virginia GLI Bus Inspection Photos

81. MCI-001329 – MCI-001338 – 3-62A – locked (Tag Axle Lockout Procedure)

82. Bob Rucoba's January 24-25, 2012 Nappanee and Richmond Virginia GLI Bus Inspection Photos

CARR ENGINEERING, INC.
12500 Castlebridge Drive
Houston, Texas 77065-4532
Telephone: 281/894-8955
Fax: 281/894-5455

August 11, 2011

Mr. John Dacus
Hartline Dacus Barger Dreyer LLP
6688 North Central Expressway
Suite 1000
Dallas, TX 75206

Re: [redacted]

Dear Mr. Dacus:

Per your request, I have investigated the events leading up to the referenced bus crash. As part of that investigation, the attached list of materials has been analyzed.

Work Summary

Several tasks were performed in order to reach the opinions and conclusions presented in this report. The following is a brief summary of those tasks:

- Conduct a vehicle inspection of the incident bus
- Conduct a site inspection and site survey
- Construct a detailed accident reconstruction, including vehicle speeds and vehicle motion
- Conduct a vehicle inspection of an exemplar bus

Based on the investigation to date, the following opinions and conclusions have been reached:

1. The crash occurred on March 16, 2010, as a 1995 MCI/[redacted]USA Model 102DL3 bus was driving southbound on Interstate Highway 37 (IH-37) in Atascosa County, Texas. 45 passengers were onboard. In the area of the crash, IH-37 is a four lane paved asphalt roadway with improved, paved shoulders. The northbound and southbound lanes are divided by a grassy median. The posted speed limit is 70 miles per hour. The police report indicates that at the time of the crash the roadway surface was "wet" and the weather conditions were "cloudy".

2. According to the police information, the bus was in the right hand lane when the "the driver heard a loud noise from underneath the vehicle when a U-Joint broke from the driveshaft. (Bus) driver reacted, locked up the brakes, and skidded onto the improved shoulder. (Bus) driver overcorrected left and sent (bus) into a side skid across the (southbound) lanes into the center median". The bus slid into the median, passenger's side leading. The bus's tires furrowed into the earth and the bus rolled onto its passenger side. The bus continued sliding rear end leading and spinning in the counterclockwise direction while on its passenger side. The bus came to rest on its passenger side in the median with its front end pointing towards the northwest. During the crash, two occupants were fatally injured.

3. The scene evidence shows that the bus was being continuously steered and braked in a right turn for approximately 300 feet until it exited the right lane and entered the paved shoulder. The driver then abruptly steered the bus to the left causing the bus to exit the paved shoulder, slide across the two southbound travel lanes and enter the median. The bus slid on the pavement in a left turn for approximately 208 feet. The bus then furrowed in the grass median for approximately 44 feet and then began to overturn. The bus rolled/slid on its passenger side for approximately 61 feet before coming to rest.

4. The first physical evidence located by the police was pieces of metal from the bus's driveshaft universal joint. The first piece of metal was located approximately 230 feet north of the start of first tire mark. Based on my analysis and investigation, I have concluded that the universal joint that connects the driveshaft to the transmission failed first and the pieces of metal found at the crash scene were from that universal joint. After the driveshaft became disconnected at the transmission, the undercarriage damage and tire markings indicate that it continued to rotate while still connected to the differential on the #2 axle. The driveshaft remained connected to the #2 axle differential while the bus was still moving on the pavement throughout the right turn. The driveshaft/differential universal joint subsequently failed fully freeing the driveshaft from all connections. Based on my exemplar bus inspection, physical limitations in the undercarriage prevent the driveshaft from being ejected out from under the bus while the bus remained upright on all tires. Once the bus rolls significantly onto its passenger's side tires, the driveshaft is able to slide out from its undercarriage constraints and get ejected from the bus. This explains why the driveshaft was found in the median south of the bus point of rest and not left behind on the pavement.

5. The first tire mark was a braking mark which began in the right hand southbound lane and it was determined to be from the passenger side tag axle (#3) tire. Approximately 78 feet further south a second tire mark began. This tire mark was a braking mark created by the right front tire. Approximately 34 feet further south a third braking tire mark began and it was determined to be from the driver side inboard tandem drive axle (#2). Lastly, at approximately 55 feet further south a fourth braking tire mark began and it was determined to be from the driver side drive axle (#2) tire. An analysis was performed on the tire marks created by the bus while it was in a right turn. The two skid marks made by the #2 axle have an unusual "wavy" appearance. Nothing on the roadway surface could have caused or contributed to the tire mark appearance. The "waviness" of the #2 drive axle tire marks is more consistent with the rotating driveshaft – unconnected at the transmission but still connected at the #2 axle differential - causing an oscillation in the #2 axle

6. The bus was inspected by the police for mechanical problems that could have caused or contributed to the crash. Officer Hughey testified in his deposition that the steering linkage was found intact and functional. I also found the steering linkage to be intact. The vehicle's path confirms that the bus's steering system was working properly and responding to the driver's inputs. The police inspected the bus brake system and found "brake drums on axle 2 and 3 left side had rust on drum, linings were not making contact with brake drum although there is push rod movement it doesn't appear that the linings are making contact with the brake drum." In the early phases of the crash when the bus was traveling straight and in a right turn, the driver applied a hard brake application to the point of creating locked wheel skid marks. The fact that some tires locked and others did not on the same axle indicates that there was some brake imbalance. The bus was able to be steered to the right because the driver's brake application only locked up the right front tire but not the left front tire.

7. The cause of the crash was due to driver error combined with an improperly maintained bus. The precipitating event was the failure of the transmission/driveshaft universal joint. My discussions with other defense experts in this matter indicate that the universal joint failed due to improper maintenance and was not caused by improper design. The bus driver responded to the driveshaft universal joint failure by steering and braking her vehicle into a right turn. The fact that the initial locked wheel marks were being made by right side tires only would have contributed to forces directing the bus to the right. After the driver steered her vehicle onto the paved shoulder she overcorrected back to the left. The reentry path confirms that driver steered her vehicle abruptly rather than remaining in the shoulder and slowing her vehicle down in a controlled manner. There were no obstacles or obstructions which would have prevented the driver from staying on the paved shoulder and stopping her vehicle.

8. The cause of the crash was not due to an unlocked tag (#3) axle. I have reviewed the reports by plaintiff's and [redacted] representatives. [redacted] representatives have attributed the cause of the crash to the failure of the driveshaft universal joint followed by an impact between the rotating driveshaft and the tag axle locking plate. Allegedly, that impact caused the tag axle to unlock. For example, [redacted] expert Aaron Jones opines that "the deformation on the clamping plates is consistent with the rotational direction of the driveshaft when the bus is moving forward. This damage generated by the driveshaft resulted in opening of the clamping plates near the locking pin." In my inspection of an exemplar bus, I found it impossible to replicate the contact mark between the driveshaft and the locking plates when the transmission joint was disconnected. I found it possible for the driveshaft to contact the locking plates when both the transmission and differential u-joints are disconnected, however; the motion required to move the driveshaft into the contact zone did not agree with the laws of physics or the physical evidence. To date, no clear evidence has been produced that shows the impact mark on the locking plate while the bus was on its side at the point of rest.

In Thomas Fugger's report he opined that the tag axle unlocked "at some point prior to or during the movement toward the right." Fugger also stated that "if the tag axle became unlocked during the movement to the right this would precipitate the counterclockwise yaw condition that the motorcoach went into in the subject accident." [redacted]epresentative Lawrence Yohe opined in his report that "the only way the bus would have veered to the right at highway speeds was through the influence of a tag axle that was unlocked and/or was steering to the left relatively early in the accident sequence." Yohe further opined that "regarding the driver overcorrecting to the left, forces were at work in the rear of the bus that would make it extremely difficult to judge how far to turn the steering wheel to the left to keep the bus from going off the roadway." Additionally, Yohe states "the driver was basically in an uncontrollable situation." During my inspection of an exemplar bus, I disconnected both ends of the driveshaft universal joints. I have reviewed the extensive handling evaluations and tests performed by Kevan Granat on an exemplar MCI 102DL3. His work confirms that the MCI bus possesses a margin of safety when the tag axle is unlocked and the bus is traveling at highway speeds. Even with the tag axle unlocked, the bus will accommodate reasonable driver demands and can be brought to a controllable stop.

9. The bus was equipped with a Detroit Diesel Electronic Control (DDEC) IV event data recorder. The bus originally came with a DDEC III and it is unknown at this time when the DDEC IV unit was installed in the crash-involved bus. The DDEC data indicates that the bus attained a speed of approximately 69 miles per hour just prior to the brakes being applied. To date, a complete copy of the DDEC output report has not been provided. At this time is not possible to verify the overall accuracy of the DDEC results.

10. The cause of the overturn was due to forces generated by; (1) the speed of the bus, (2) the bus was sliding near broadside and (3) the bus tires furrowing into the earth. These types of forces will cause the overturn of all vehicle types.

All of the opinions in this report are expressed with a reasonable degree of engineering certainty. I reserve the right to supplement or modify my opinions if new information is received or in response to the work and opinions of opposing experts. Attached to this report are my CV, rate sheet and testimony list.

Sincerely,

P.P. Robert P. Rucoba

Robert P. Rucoba

Attachment A – File Materials
Miscellaneous Materials

- Petition
- Vehicle Records
- News Articles
- Sales Order
- Warranty Records
- Recorded Interview of Jerricah Capers
- Recorded Interview of Nina Feddersen
- Plaintiffs' obj. and responses to Def. Americanos, U.S.A., LLC.'s first request for production
- Crash Scene photos
- Police Accident Investigation Report and file
- Agreed Scheduling Order
- CDs containing: Operators Manuals, Parts Manuals, Maintenance Manuals (MCI000459-MCI000468), MCI000471-MCI001211 - MCI Production documents inc Service Manuals, Technical Bulletins, Training Manuals; MCI000001-MCI000458 Protective Order Documents - MCI Technical Documents including design materials.
- Photographs by Kevin Granat
- Americanos photos, 7/22/10 Evidence inspection photos
- Def [redacted]and Americano's Resp to Motor Coach Industries 1st Req for Prod and 1st Set of Interrog
- Repair/Towing Records
- Americanos USA LLC's Obj and Resp to Pltfs' Req for Prod, Exhibit 10- DDEC Data
- Photographs by David J. Coates, Ph.D. 01/14/11
- DPS Reconstruction Investigation Report
- Campbellton Metallurgy Examination Results from MSI Testing & Engineering, Inc.
- Police Dept. Records
- Agreed Scheduling Order
- Americanos USA, LLC, Greyhound Lines, Inc. and Irma Morado's seventh supplemental responses to Plaintiff's and intervenors' request for disclosure
- Exhibits to Trooper James Kellert's Depo
- Plaintiff's designation of expert witnesses
- Reports by David Stopper, Andrew D. Irwin, Edward P. Cox, John L. Cayias, Richard Cortez, David Feltoon, Frank G. Brown, Leon Feazell, Thomas F. Fugger, Jr., David W. Hall, Juan Herrera, Aaron J. Jones, Raul G. Longoria, Ricardo J. Palacios, John D. Pratt, Lawrence L. Yohe
- Bosch Test Track testing
- Brian Lawson notes and drawing
- MSi Testing and Engineering Report

Depositions

- Trooper Wesley Cooper (11/8/10)
- Trooper James Kellert (04/25/11)
- LT. Timothy A. Lite (04/27/11 + exhibits)
- Eldridge Hughey (06/16/11 + exhibits)
- Irma Morado (4/7/11 and 4/8/11 + exhibits)

PE12-007

MCI

4-27-2012

Response 9

Expert Report - Bob Rucoba - WITH Attachments

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CAUSE NO. 2010-03-1717-C

DANIEL CAMPOS, ET AL.,) IN THE DISTRICT COURT OF
)
VS.) 197TH JUDICIAL DISTRICT
)
AMERICANOS, U.S.A.,)
L.L.C., ET AL.) CAMERON COUNTY, TEXAS

****

ORAL AND VIDEOTAPED DEPOSITION OF
ROBERT RUCOBA
SEPTEMBER 21, 2011
VOLUME 1

****

ORAL AND VIDEOTAPED DEPOSITION of ROBERT RUCOBA, produced as a witness at the instance of the Defendant, Americanos U.S.A., L.L.C., and duly sworn, was taken in the above-styled and numbered cause on the 21st of September, 2011, from 10:14 a.m. to 5:37 p.m., before Donna J. Howson, CSR in and for the State of Texas, reported by machine shorthand, at the offices of Hartline Dacus Barger Dreyer & Kern, LLP, Three Riverway, Suite 650, Houston, Texas 77056, pursuant to the Texas Rules of Civil Procedure and the provisions stated on the record or attached hereto.

0002

A P P E A R A N C E S

FOR THE PLAINTIFFS:
Mr. Justin A. Hill
Watts Guerra Craft, LLP
300 Convent Street, Suite 100
San Antonio, Texas 78205

FOR THE DEFENDANT AMERICANOS, U.S.A., L.L.C.:
Mr. Stephen C. Haynes
Mr. Guillermo Tijerina, Jr.
Vidaurri, Lyde, Rodriguez & Haynes, LLP
202 North Tenth Avenue
Edinburg, Texas 78541

FOR THE DEFENDANT MCI:
Ms. Melissa Dorman
Hartline Dacus Barger Dreyer & Kern, LLP
6688 North Central Expressway, Suite 1000
Dallas, Texas 75206

FOR THE DEFENDANT ARVIN MERITOR:
Mr. Thomas M. Bullion, III (Via Telephone)
Germer & Gertz, LLP
301 Congress Avenue, suite 1700
Austin, Texas 78701

ALSO PRESENT:
Ms. Myra Thetford, Videographer

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EXHIBITS

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(Exhibit Numbers 1 through 13 were marked.)

THE VIDEOGRAPHER: On the record at 10:14 a.m., beginning Tape 1.

ROBERT RUCOBA,

having been first duly sworn, testified as follows:

EXAMINATION

BY MR. HAYNES:

Q. Would you state your name for the record?

A. Yes. My name is Robert Rucoba. That's R-U-C-O-B-A.

Q. Mr. Rucoba, my name is Steve Haynes. We met just before your deposition started, correct?

A. Yes, sir.

Q. I'm going to be asking you some questions this morning and probably this afternoon, too; and you've done this before, so you know that all your answers to my questions or answers to questions that any of the other attorneys ask you here today are testimony that can be used at the trial of this case, right?

A. That is my understanding.

Q. Okay. Let me show you what I've marked as Exhibit 1 to your deposition. That's a copy of the

deposition notice, correct, for today?

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A. Yes, sir.

Q. And you also have a copy there in front of you?

A. I do.

Q. We received documents from your file yesterday at our office, and I don't want to, you know, reinvent the wheel and recopy everything if we don't need to; but what I'd like to do to begin with is just to run through the subpoena with you and make sure that everything that's responsive to the subpoena is here in this room with us today. Okay?

A. That will be fine.

Q. And Number 1 asks for your current CV, and that's been provided, right?

A. Yes, sir.

Q. Number 2 is a list of all litigation-related matters in which you've been engaged. Has that been provided?

A. Yes, sir.

Q. And I know this is going to be out of order, but just to -- are we talking about Exhibits 12 and 13 or are there other documents that would be responsive to that?

A. Yes, Exhibit 12 and thir -- 12 and 13 go back over the last four years.

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Q. All right. What about Number 3, any papers, articles or textbooks authored, written or presented by you in any field in which you have an opinion in this matter? Are there any documents that would be responsive to that request?

A. Yes, any of the scientific bases that I used in my calculations or that I relied upon I have brought today.

Q. Okay. And can you identify those -- those articles for us, papers or articles?

A. Sure. They would be attached to my speed calculations which are in the analysis section of my case book.

Q. Let me run through the ones that I was provided yesterday, and then you tell me if there are any others. There was a -- at least a portion of a NHTSA report at the top says "Heavy Truck Brakes."

A. Yes, sir.

Q. Okay. Is that what your -- is that one of them?

A. That is one of them.

Q. It looks like there was just one page, Page 48, attached to that cover sheet?

A. Correct.

Q. That's all you have as well?

0011

A. Correct.
Q. All right. Then there's an SAE paper entitled "Friction Applications in Accident Reconstruction."
A. Yes, sir.
Q. That's also just one page from that paper?
A. Correct.
Q. It's entitled "Velocity Decrement Values" at the top, and it's Page 13.
A. Correct.
Q. Then the next one that I was provided was Roadside Design for Safety. At the bottom it says, "reprinted from Highway Research Board Proceedings," 9 -- "Volume 39, 1960." Is that one of the articles --
A. Yes, sir.
Q. -- that you were referring to?
A. Yes, sir.
Q. And it looks like there's two pages from that article, Page 143 and 144, that are attached?
A. Correct.
Q. Is that all?
A. Yes, sir.
Q. And then the other article that I was provided that would be responsive to that subpoena

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duces tecum item is entitled "Traffic Accident Investigation Manual." The author is listed as Mr. Baker from Northwestern Traffic Institute; is that correct?
A. Correct.
Q. And, again, there is just one page attached to that cover sheet?
A. Correct.
Q. And then at the top -- well, the first thing I can read is "Exhibit 9-4, Examples of Resistance to Motion in Vehicles." Is that the same page you have?
A. Yes, sir.
Q. Then I -- we were also provided an article entitled "Highway Collision Analysis" by James Collins. Is that one of the articles?
A. Yes, sir.
Q. And, again, there's just one page from that article, Page 88, attached to that cover page.
A. Correct.
Q. And then there's another SAE -- SAE paper entitled "Braking Performance of Heavy U.S. Vehicles," and it has just has one page, again, attached. At the top right-hand corner it says it's 870492.
A. Correct.
Q. That was all that was provided out of that

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paper as well.
A. Correct.

Q. Were there any other papers or articles or textbooks authored, written, or presented by you in any field in which you have an opinion in this case?
A. I had a document that was provided to me which is the Standard Coach Specifications for an MCI Model 102DLS. I used that information to draw up the -- the bus on my scale diagram.
Q. Okay. I have a document entitled "Standard Coach Specifications for MCI Mod -- MCI Model 102DL3 effective January 1, 1997, through August 31, 1997." Is that it?
A. That's it.
Q. Okay. Who provided you with that document?
A. Ms. Dorman.
Q. And I don't know why, but it looks like that's all I got. So is -- I assume there is more than just a cover sheet.
A. There's some -- two pages of dimensional information that I've brought here today.
Q. Okay. Can I go ahead and mark that and -- as an --
A. Sure.
Q. -- exhibit since I for some reason don't have

0014

it?
A. Sure.
Q. Thanks. And we'll mark this as Exhibit 14.
(Exhibit Number 14 was marked.)
Q. (BY MR. HAYNES) All right. Are there any other papers, articles or textbooks authored, written or presented by you in which you have an opinion in this case?
A. No, sir.
Q. I noted on your CV that there was an article having to do with axle failure. I don't have that here in front of me. Do you know what I'm talking about?
A. I do.
Q. What's the name of that article?
A. I don't remember the specific name. It had to do with the reconstruction.
Q. I found it.
A. Okay.
Q. Just to help out. Entitled -- it's an SAE paper entitled "Analysis of Axle Shaft Failures for Use in Crash Reconstruction," and you're one of the authors of that article?
A. Yes, that is a paper that I coauthored.
Q. Does that article have any information in it

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that you relied on in coming to your opinions in this case?
A. No, sir.
Q. Why is that article not relevant to your

opinions in this case?
A. Well, it has to do with simulating a failure of an actual shaft, and that's not the type of failure that we're looking at in this particular case.
Q. What's the difference?
A. We're talking about an actual axle on a van as being simulated in that or being tested and re-created in that paper. Clearly here we're talking about failure of a driveshaft on a bus.
Q. So as far as you're concerned, that article has no relevance in any way to this case and this accident?
A. Not with regard to the failure mode. They're completely different and the vehicles that are being discussed in that paper versus what we're here to discuss today.
Q. Did -- did you review this article in your -- as part of your work in this case?
A. No, sir.
Q. So you remembered writing it obviously, but you knew that it didn't have anything to do with the

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work you were doing in this case. So, you didn't go back and look at it or review it or anything like that?
A. I didn't review it for this case, for the reconstruction in this case. It wasn't something I did.
Q. You didn't consider it relevant?
A. No, sir.
Q. Okay. So then we've covered any papers, articles or textbooks authored, written or presented by you that have anything to do with your opinions in this case, correct?
A. Correct.
Q. Number 4 is documentation of the amount of income received by you or, I guess, Carr Engineering as a result of your work in this case. And let me show you what I've marked as Exhibit 11 and if you could identify those for us.
A. Yes, they appear to be invoices that have been generated by Carr Engineering in this matter.
Q. To your knowledge, is this all the invoices that have been generated by Carr Engineering as of this date?
A. Yes, to my knowledge.
Q. So tell me how it works at your firm. When

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the invoices are going to go out, do you review them and make sure and approve them before they go out, or is that somebody else's job?
A. I rely upon the Billing Department to accurately record the -- the hours that are generated or the expenses that are generated in those bills or

recorded in those bills. I don't go back and cross-check those before they go out.
Q. I understand, but do you look at them before they go out?
A. I do not.
Q. Do you have any reason to believe -- have you looked at these invoices that are in Exhibit 11?
A. I have not.
Q. You never have?
A. No, sir.
Q. Do you have -- would you have any reason to believe that the -- let me hand them to you. Do you have any reason to believe that they're incorrect or that the amounts that have been billed are -- aren't consistent with the amount of work that has been done and billed?
A. I see nothing that stands out that appears to be inaccurate with my review of those.
Q. It looks like that last invoice is dated

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September 16th, 2011. So I'm assuming there has been some additional work done since that date.
A. Sure.
Q. Can you give us an idea of what work has been done since the date of the last invoice and about how many hours are yet to be billed not counting today?
A. I don't know how many hours have been accrued since they -- the time of this last invoice. I can tell you that I've received a number of different documents that are associated with this case. I have reviewed those documents. Some of them have been depositions, and I've tried to read them as they've come into my office.
Q. Okay. So in addition to what's included in the invoice dated -- last invoice dated September 16, 2011, which is part of Exhibit 11 to your deposition, you've received other materials on this case that you've reviewed and you've also, I guess, done some preparation for your deposition today, right?
A. Sure.
Q. Then in addition to that time will be the -- the time that we spend here today?
A. Yes, sir.
Q. Everybody I know will tell you that my math skills are terrible, but it looks like Carr

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Engineering has billed in excess of $100,000 in this case through September 16, 2011. Does that sound about right to you?
A. I don't know. I've not added up the invoices.
Q. Okay. Take a look at it and tell me if I'm way off, because I could be.
A. Sure, I'd say that's a fair estimate.

Q. How much time do you think you spent getting ready for your deposition here today?
A. I'd say I'd estimate probably around four hours of my time spent alone reviewing all of the materials that I've been provided. I met with Ms. Dorman yesterday in preparation for this deposition. I'd estimate that was probably another four hours.
Q. An additional four hours on top of the four hours that you spent by yourself?
A. Yes, sir.
Q. And it looks like your -- what rate were you billing for your preparation for the deposition?
A. Carr Engineering bills my time at $350 per hour.
Q. Is that just a flat rate for everything you do?

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A. Yes, sir.
Q. It looks like when the first invoice went out back in September of 2010, September 9th, 2010, your rate at that time was $295 an hour. Does that sound right?
A. Yes.
Q. And I guess in 2011 or thereabouts, it went up to 350 because your February 23rd, 2011, invoice reflects that hourly rate?
A. That is correct.
Q. So whether you're at an accident site, inspection, reviewing a deposition, giving deposition testimony, testifying -- testifying at trial, it's always 350 an hour?
A. Yes, sir.
Q. And what about travel, how do you bill travel?
A. Same. I try to keep my travel expenses down as best I can, but any time that I do spend that I'm working on a case while traveling will still be billed at $350 per hour.
Q. So is that portal to portal or just for the actual time spent traveling or doing whatever work you are going to do?
A. The former.

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Q. So from the time you leave your office until the time you get back, you're billing 350 per hour?
A. Yes, sir.
Q. Does that include while you're sleeping?
A. No, sir.
Q. Okay. So how does that work then?
A. It just works when I'm up doing my job.
Q. Okay.
A. If I'm eating or sleeping or working on other matters, I don't bill that. Watching television, I

don't charge for that.
Q. Okay. But if you're on the airplane or the car or you're doing actual work, then you bill that at 350 per hour?
A. Yes, sir.
Q. Believe it or not, I actually had an expert tell me one time, no, from the time I leave until the time I get back, it's whatever the hourly rate was.
A. Wow. Wow.
Q. I guess it's a pretty good deal if you can get it.
A. If you can get it.
Q. Okay. Number 5 is a copy of every report prepared by the witness, or at the witness' direction, and I have one report from you dated August 11, 2011.

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Are there -- have you prepared any other reports regarding your opinions in this case?
A. I have not.
Q. Number 6 is all notes, calculations, reports or similar documents authored by you concerning this case. In addition to the report that we just mentioned, what other documents have been authored by you in this case?
A. Well, my vehicle or scene inspection notes I have brought today. They are in this red binder in front of me. Any calculations that I would have generated I've also brought today. They're inside this red binder as well. I have made some handwritten notations on some drawings that were provided by Mr. Fugger, and those drawings have been brought today as well.
Q. Okay. I think everything except for those handwritten notations were -- was previously provided to my office. Is that your understanding?
A. That is my understanding.
Q. And we'll figure out how to deal with those handwritten notations as -- as we go through the day.
Number 7 sounds similar to Number 3, but it says all treatise, scholarly journals, professional studies, literature and other similar documents, this

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is consulted by you for your opinions in this case. Are there any other documents that we haven't mentioned --
A. No.
Q. -- already?
A. No, sir.
Q. Number 8 is all promotional, advertising -- let me -- let me ask you this question about Number 7. The articles that we were going through earlier with respect to Number 3, a lot of those articles we just had one or two pages that were attached. Did you actually review the entire article and then decide

that those are the pages that you thought were pertinent to your opinions in this case or how did that come about?

A. In my past experience with working with a number of technical documents in the field of accident reconstruction and investigation, I have reviewed all of those items that are -- I have brought here today in their complete form. Over the years, though, I have found that there are selected excerpts from those particular treatises that I found useful or helpful in my reconstruction. That's why I brought those smaller portions here today.

Q. So if I'm understanding you right, you

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already had those articles with the one or two pages attached kept separately somewhere?

A. Sure.

Q. You didn't have the whole article, and you didn't review the whole article for this case and then pull out those separate pages?

A. Right, the complete document is in our Carr Engineering Library. I have the selected excerpts because I have found them to be useful in the past for other reconstruction matters.

Q. Number 8 is all promotional, advertising or literature or documents advertising your expert witness services.

A. No, there are no such documents.

Q. Okay. Number 9, all contracts or agreements between the witness and who hired you in this case.

A. There are no such documents.

Q. Tell me how it works when -- when a lawyer's office contacts your office to hire you on a case. Is there a fee agreement sheet or anything that's -- that's submitted or how does that work?

A. It depends. There are clients that have contacted me and wanted to find out what the current rate schedule is before giving me the official go-ahead to start working on a matter.

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In this particular matter, that wasn't something that we needed to do with Ms. Dorman when she first contacted me.

Q. Ms. Dorman's law firm, Hartline Dacus Barger Dreyer & Kern, was that not necessary because you've worked for them in the past or why was it not necessary for that to be handled up front with their firm?

A. The former.

Q. Okay. Number 10 is all correspondence, telephone message slips, email, and any and all other records reflecting any and all communications between you and the law firm that retained you, Hartline Dacus Barger Dreyer & Kern. Have those documents been

produced here today?
A. Yes, sir.
Q. I know we received some -- some correspondence and emails yesterday. Would that be all there is?
A. Yes, sir. No, I take that back. I have received a few more pieces of information that came via regular mail, but I have brought those cover letters as well today.
Q. Those are in your box I was looking at before the deposition started?

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A. Yes, sir.
Q. Number 11, all records of professional time spent by you with respect to this case, and would that -- would there be anything else other than Exhibit 11?
A. No, sir.
Q. How do you actually keep track of your time?
A. I record it in a computer software that is directly linked to the billing office of -- or the Billing Department of Carr Engineering.
Q. Do you know what the name of that software is?
A. I think it's called BillQuick.
Q. That's a good name for it.
MS. DORMAN: Better than bill often.
MR. HAYNES: I don't know, quick or often it's --
Q. (BY MR. HAYNES) There -- the reason I'm asking, there is -- there are a number of general entries in your bills. For example, I think in almost every one it says "prepared detailed crash reconstruction." Then it's got a number of hours as well as the person who performed the work for that bill listed underneath. Is that the way you actually enter your information in the BillQuick software, or

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is it converted to that by the Billing Department?
A. No, those are the -- the entry categories that you are allowed to use with that software.
Q. So that's what you enter?
A. Yes, sir.
Q. Number 12 is all documents provided to you by the person or attorney who retained you with respect to this case. Do we have all of those documents here today?
A. Yes, I've either brought them in paper form or they're on the many disks that I have brought today.
Q. Yeah, I've been trying to figure out which disks have documents that we already have and which ones may not, and it's kind of a difficult thing to do. So what I've done so far is I've gone ahead and

marked as exhibits just a number of disks just to be on the safe side. What we'll do real quick is just run through those, and I'll have you identify what they are. All right?
A. That will be fine.
Q. What's Exhibit 2? What disk is that? What's on that disk?
A. This is a disk that's labeled "Campos versus Greyhound, HDBD Number 1330.9820." The label says
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"Tag axle steering locked and unlocked Tests 5 through 13, 15, 17, 19, 21, 23, 25, 29, 33 through 38, and 42 through 47." I believe that this is the disk that contains selected tests from the work done by Mr. Kevin Granat.
Q. And, you know, just to speed things along since they've already been marked, if you will just tell me what you understand is on the disk, then that will -- that will be sufficient for now. What is the disk Exhibit 3?
A. This looks like more of Kevin Granat's work products. It's his photos and tests, further tests that he performed in addition to the previous disk that we just talked about.
Q. What is Exhibit 4?
A. More Kevin Granat photos dated November 4th of 2010.
Q. What is Exhibit 5?
A. These are various vehicle photos dated July 22nd of 2010.
Q. What is Exhibit 6?
A. This is photos and videos of the crash-involved bus dated June 30th and July 1st of 2011.
Q. What is on the disk labeled Exhibit 7?
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A. Various notes and photos of the crash scene and a scene inspection.
Q. What is on the disk labeled Exhibit 8?
A. David Coates' inspection photographs dated January 14th of 2011.
Q. What is on the disk labeled Exhibit 9?
A. This is a bus inspection photos dated June 30th of 2011.
Q. That is not Carr Engineering work product, right?
A. That is not.
Q. What is on the disk labeled Exhibit 10?
A. Bus parts inspection dated June 30th of 2011.
Q. Number -- Item 13 in the subpoena is for all documents which the witness has read, reviewed, or used to reflect -- refresh your recollection prior to the deposition. Is there anything that's responsive to that subpoena duces tecum item that's not on the

table or in this room?
A. No, everything I have reviewed in this matter, relied upon I've brought today.
Q. Item 14 is the most current list of professional publications authored or edited by you related to your testimony in this case. Is there any document responsive to that other than your CV?

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A. Nothing beyond the CV.
Q. And I don't think any -- any of the articles listed in the CV have been produced. Does that mean that none of those were reviewed or relied upon by you in this case?
A. The latter, that is correct.
Q. Number 15, Item 15 is any and all documents and/or tangible items reviewed by you in connection with this case. Is there any document responsive to that request that's not here in the room today?
A. No, sir.
Q. Number 16 is any and all documents or tangible documents sent to or provided to you in connection with this case. Same question: Any documents responsive to that item that are not here in the room with us today?
A. No, sir.
Q. Number 17, all raw data used, received or relied upon by you in this case.
A. I have brought that in some form or fashion here today.
Q. 18, all work product created by you in this case?
A. I have brought all of that today.
Q. Thank you. Number 19, all written materials

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prepared by you or at your direction regarding this case?
A. Yes, all written materials prepared by me I have brought here today.
Q. This report dated August the 11th, was there a draft report before this final version or was it just one -- one -- one draft and final version all together?
A. All together.
Q. All right. So in other words, you didn't prepare a draft report and send it to the law firm that hired you for review before you signed it?
A. I did not.
Q. Number 20, all documents prepared by you regarding this case. Did I already read that one? It's kind of the same.
A. Sort of the same. Yeah, we sort of touched on that --
Q. Different wording, but you --
A. -- a couple of different times, yeah.

Q. Okay. So all of that is -- everything responsive to 20 is here as well?
A. Yes, sir.
Q. How many different ways can you say the same thing, right?

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A. Yes, I was --
Q. 21?
A. -- thinking the same thing when I looked at 21.
Q. Right.
A. Yeah.
Q. Okay. Same answer?
A. Same answer.
Q. 22, any and all photographs, videos, audio recordings of any and all testing performed by you, at your direction, with your involvement or reviewed by you with regard to this matter?
A. I have brought all of those things.
Q. All right. And I know in your report you mentioned some testing that you did, right? Correct?
A. I'm not sure what you're referring to.
Q. Well, did you do any testing or did Carr Engineering do any testing as part of your work in this case?
A. We didn't do any vehicle dynamics testing if that's what you're asking about. I'm relying upon the work that was done by others.
Q. Was any other type of testing performed by you or Carr Engineering in this case?
A. Nothing in the way of vehicle dynamics type

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testing. I did some work looking at an exemplar, a bus, looking at what it takes to move the driveshaft around when it becomes disconnected. I don't know if I necessarily call that testing, but it is something that I did with an exemplar bus.
Q. You said with the exemplar bus you looked at what it takes to move the driveshaft around?
A. Yes.
Q. When -- when was that? What do you want to call it, if you don't want to call it testing, sir, or is it okay to call it testing?
A. In my --
Q. It looks like whatever you did, whatever we're going to end up calling it, took place on August the 2nd, 2011?
A. Yes, it was an exemplar vehicle inspection.
Q. Okay. All right. So would you prefer to call it just an exemplar vehicle inspection --
A. That would be fine.
Q. -- as opposed to testing. Yes?
A. That would be fine.
Q. Okay. With respect to the exemplar vehicle

inspection in August 2011, do we have all of your -- we were produced -- produced to us yesterday were some -- some notes, photos. Well, I guess that may be it.

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Some notes and photos. Are there any other documents that would be responsive to Number 22, Subpoena Duces Tecum Item Number 22, other than that regarding the exemplar vehicle inspection?

A. No, sir.

Q. There's no videos, in other words?

A. Correct.

Q. Even if we're not going to call it testing, was there any other inspections or other activity performed by you other than on August the 2nd, 2011, that would be responsive to Subpoena Item Number 22?

A. If we're going to talk about photographs that were made on another date, sure. I mean, I have my vehicle and scene inspection notes and photographs that I generated. I have brought them here. We've sort of touched on those in a couple of earlier points on the subpoena.

Q. Right. You're talking about your notes and photographs from your inspection of the motor coach involved in this accident, right?

A. Correct.

Q. And notes and photographs from the scene inspection?

A. Correct.

Q. Anything else?

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A. No, other than if we're going to talk about testing that I have reviewed, I, of course, reviewed the work that was done by Mr. Granat, and I reviewed the work that was done by the experts hired by your firm.

Q. Right. And we'll talk about all of that in more detail today.

I think actually Number 22 specifically asks for documentation regarding testing performed by you or at your direction or with your involvement or, right, or reviewed by you. Another one of those all-encompassing items. Got you at the last one in case you are not reading closely.

A. It was reviewed.

Q. All right. When were you initially hired in this case?

A. Are we ready to move on to something else because I was just going to ask for a short break if --

Q. We are. So that would be a good -- this would be a good time to take a break.

A. Great.

THE VIDEOGRAPHER: Off the record at 10:56 a.m.

(Recess taken, 10:56 a.m. to 11:02 a.m.)

THE VIDEOGRAPHER: Back on the record at 11:02 a.m.

Q. (BY MR. HAYNES) Mr. Rucoba, am I saying that right?

A. Yes, you are.

Q. Okay. You've told us earlier that you have been retained by MCI's law firm in this case in the past.

A. I have.

Q. Can you give us an idea, more or less, on how many occasions?

A. I don't know a number exactly. If I was to make an estimate, it would be around a dozen times.

Q. Okay. Over how long a period of time is that?

A. Oh --

Q. When is the first time, more or less, that you were retained by Hartline Dacus --

A. If I was to make --

Q. -- Barger Dreyer & Kern?

A. I have no idea, but around ten years ago.

Q. Have you ever been retained as an expert in a case involving MCI before this one?

A. Yes, sir.

Q. Was MCI a -- have you ever been retained as

an expert to testify -- have you ever been retained as an expert from -- by lawyers who were representing MCI before this one?

A. Yes, sir.

Q. More or less, how many times?

A. Less than five.

Q. Three or four?

A. Yes, sir.

Q. Have you ever been retained as an expert by lawyers who were representing Greyhound, or Greyhound?

A. I don't recall. I can't say yes or no. Going back through the years, nothing -- nothing comes to mind, but I may have been retained by attorneys representing Greyhound in the past.

Q. Have you ever been retained by attorneys representing Americanos in a -- in a lawsuit before?

A. I don't believe so.

Q. Have you ever testified in any lawsuits against Greyhound?

A. I don't testify for or against people in lawsuits, but if you're asking have I ever been hired by attorneys on the other side of a litigation matter involving a Greyhound bus, I don't believe so.

Q. What about an Americanos bus or motor coach?

A. I don't remember right now if I have or I

haven't.
Q. Have you been retained as an expert directly by MCI in the past?
A. No, I have never worked directly for MCI.
Q. Do you have any other ongoing cases with Hartline Dacus Barger Dreyer & Kern other than this one?
A. Yes, sir.
Q. How many other cases are pending right now that you're working on for them?
A. I don't know. My best estimate would be a couple right now.
Q. A couple others besides this one?
A. Yes, sir.
Q. What were the other cases about that you were hired by lawyers representing MCI?
A. Other bus crashes in the past.
Q. What were you asked to do in this case when you were hired?
A. I was asked to investigate, analyze and reconstruct this crash.
Q. When, more or less, were you initially hired?
A. I can tell you exactly. I think there's a telephone record that's in that box of material that I brought today.

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Q. You don't have to be exact. Can you give me a pretty good idea?
A. No, not without, honestly, looking at the invoices. I don't know.
Q. Okay. Well, I guess if you can't ballpark it, then give me an exact.
A. Sure.
Q. We can go off the record while you're looking for that.
MS. DORMAN: Actually --
THE VIDEOGRAPHER: Off the record.
MS. DORMAN: Let's stay -- let's stay on. It won't take him long at all.
MR. HAYNES: Okay.
MS. DORMAN: It usually takes more time --
THE VIDEOGRAPHER: On.
MS. DORMAN: -- to go off and on.
MR. HAYNES: That's fine.
A. I was first contacted in this matter July 1st of 2010.
Q. (BY MR. HAYNES) And who contacted you?
A. Ms. Dorman.
Q. Okay. What -- what is your field of expertise in this case?

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A. Accident investigation and reconstruction.
Q. Are you intending to offer opinions in this

case in other areas?
A. That's a pretty broad area.
Q. I agree.
A. I'm not quite sure what you're -- what you're driving at, but, I mean, under that umbrella of accident investigation/reconstruction, there are a number of different areas that pertain to this crash.
Q. Yeah. Let me ask you more specific questions. Do you plan to offer any opinions in the field of metallurgy?
A. I do not.
Q. Do you plan to offer any opinions about whether the -- the roadway where the accident happened was defective?
A. Yes, I will be offering opinions about what role, if any, this particular roadway played in this crash.
Q. Do you plan to offer any opinions in the field of biomechanics?
A. No, sir.
Q. Human factors?
A. No, sir.
Q. Driver training?

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A. No, sir.
Q. Product defect?
A. No, sir.
Q. Motor coach maintenance?
A. No, sir.
Q. Do you plan to offer any opinions in the area of the driver's standard of care?
A. No, sir.
Q. Do you have any criticism of the investigation performed by DPS in this case?
A. Well, I haven't been hired to be a critic in this matter. I mean, I've looked at their material. I've analyzed the work that they did. There's a number of different things that they did in their investigation. I think that on -- on a whole, I believe the police did a good job.
Q. Whether you want to call it criticism or not, do you have any -- let's call it do you have any constructive criticism regarding any of the work that they performed in this case?
A. There may be some differences in terms of interpretation of some of the tire marks, but overall there is things they did that I found that were accurate.
Q. Other than differences in interpretation of

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tire marks, do you have any constructive criticism for the DPS regarding their investigation in this case?
A. No. I think that they did a good job. It was fairly thorough and well documented.

Q. Do you think the investigators for DPS were sufficiently trained and qualified to fully evaluate this accident?

MS. DORMAN: Object to form.

A. With regard to the work they performed in their interpretation of the marks and the path of the vehicle, I think they did a fairly good job. With regard to maybe their expertise with -- in -- in regards to the issue of what effect does an unlocked or locked tag axle have on this particular vehicle, I didn't see any training in that regard.

Q. (BY MR. HAYNES) All right. So, to your knowledge, the investigators for DPS do not have the training and qualifications to evaluate those types of mechanical failures in terms of whether they were or were not involved in this accident?

A. From my review of their background, I didn't see anybody that had been trained that had specific expertise in the area of what effect an unlocked or a locked tag axle has on this particular vehicle.

Q. Do you know of your own personal knowledge

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what training DPS troopers receive with respect to tag axle failures --

MS. DORMAN: Object to form.

Q. (BY MR. HAYNES) -- or locked or unlocked tag axles and their potential impact on an accident?

A. I've --

MS. DORMAN: Object to form.

A. I've never had those kinds of discussions with police officers, DPS officials.

Q. (BY MR. HAYNES) You mentioned earlier that you had some opinions about the condition of the roadway, right?

A. Yes, sir.

Q. What is your opinion about the condition of the roadway at the time of the accident?

A. Well, I think, first off, just in the overall design of the roadway, it appears that it was a fairly reasonable design in that it has a radius to it that can accommodate the travel speeds of the vehicles that are driving on that road. Although the roadway surface itself may be worn, it did not appear that it had anything in the way of defects, something that would cause a driver to lose control if they were obeying the posted speed limit and was navigating that road. There is ample room both on the left side and

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the right side of that road such that if a driver did find themselves outside of the travel lanes that they would be able to navigate that portion of the roadway or bring their vehicle to a stop without any problem, be it a small passenger vehicle or a large motor coach.

I didn't see anything in the way of overall defects in the road that would have caused the vehicle to lose control or to have a failure in the driveshaft. In other words, I didn't see anything about the roadway itself that ultimately led to the failure of the driveshaft.

Q. What investigation did you do regarding the condition of the roadway?

A. I studied the materials that were provided to me and did my own scene inspection. In other words, I looked at the materials in the form of the police file, the police photographs, and any other photographs that had been taken by others in this investigation. Then I looked at the scene myself by conducting my own independent scene inspection.

Q. Was your own independent scene inspection conducted before or after the roadway was repaved following this accident?

A. Yeah, my scene inspection was performed after

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the right-hand lane had been repaved.

Q. Have reviewed -- have you reviewed any of the documents or materials provided by the Texas Department of Transportation regarding the condition of the roadway?

A. Only those things having to do with the police investigation. Nothing beyond that.

Q. Nothing with regards to the work that they did on the road following the accident?

A. No, sir.

Q. How would you characterize the condition of the roadway at the time of the accident in terms of being wet or dry or some version of one of those?

A. Well, certainly it's a -- it's a traveled road. In other words, it's -- it wasn't brand new. Both lanes clearly had been traveled upon by highway traffic.

As far as the weather conditions at the time, the police report does indicate that the road was wet. It's my understanding that the headlamps were found in the -- or the windshield wipers were found in the on position. So at least it indicates that at least the road was damp enough to where there must have been some moisture on the ground.

The bus driver indicates that the road

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was dry. However, there is some information in the police photos which indicates that it looks like at least at the time the photos were taken the roadway was wet.

Q. There's obviously varying degrees of wet, right?

A. Sure, I think that's a fair statement.

Q. And do you know an opinion one way or the

other -- or another about the degree of -- that this road was wet at the time of the accident?
A. Well, sure. I think that if you just look at the scene photos that were taken on the day of the crash, I think it's a fair assessment to see that if it was wet, it may have been damp. However, there was enough friction between the tires and the ground such that this vehicle is clearly leaving well defined tire marks.
Q. In your opinion, did the weather conditions affect the braking ability or handling of the motor coach in this accident?
A. No, sir. I do not believe that the -- even a damp roadway would have affected the -- the motion of the vehicle based on the inputs made by the driver.
Q. Do you have an opinion whether the condition of the roadway played any part in this accident?

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MS. DORMAN: Object to form.
A. It's hard to tell. Like I said, it's a damp road. So whether or not it plays a role in the initial cause of this, I think it's difficult to say because we don't know exactly how damp it is. But what we are given is enough information that says the road was dry enough such that we have enough friction that there certainly isn't anything that would have caused this driver to lose control because she does have enough friction.
Q. (BY MR. HAYNES) You're saying there would not have been any loss of control because of a wet road?
A. Right. I'm saying that there's clearly enough friction on this roadway that I believe that this driver would have still been able to maintain -- maintain control of her vehicle had she not chosen to put in the steer inputs that she did.
MR. HAYNES: Objection, nonresponsive.
THE VIDEOGRAPHER: I have about two minutes left on tape.
MR. HAYNES: Two? You can go ahead and change it.
THE VIDEOGRAPHER: Off the record at 11:18, ending Tape 1.

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(Recess taken, 11:18 a.m. to 11:22 a.m.)
THE VIDEOGRAPHER: On the record at 11:22 a.m., beginning Tape 2.
Q. (BY MR. HAYNES) Mr. Rucoba, I believe you reviewed some DDEC information.
A. I did.
Q. What did it show that was relevant to your opinions in this case?
A. Well, the DDEC report that I was given appears to be a -- an incomplete report, and it's my

understanding that we're still trying to get a more complete copy of this report. There are -- there is some information in here which appears to be erroneous, such that -- such as the time that the last stop record is recorded being at 2:00 a.m. I found odd. The fact that we are missing a hard brake Number 2 file, which I would expect to be part of this complete record, seems to be missing as well. So there are some anomalies in this data that are either missing or appear to be incorrect.

On the whole if you -- if you accept that this is the -- the crash, about the best information that one can get from this is that the speed of the vehicle is approximately 69 miles per hour at the point where the -- the event begins. But

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other than that, that's about the most useful bit of information that you can get. There are more anomalies in this data than there are helpful pieces of information.

Q. So you think the only reliable piece of information from the DDEC event data recorder download is the speed of the motor coach was 69 miles per hour when the accident event began?

MR. HILL: Object to form.

A. I think that you can look at that. I wouldn't even put that in the category of being reliable because of the number of anomalies that are in the data and knowing the flaws that are in the vehicle systems right now. There are a number of different things that were brought out by various experts that would bear on the accuracy and the reliability of this DDEC report.

Q. (BY MR. HAYNES) Okay. You wouldn't even rely on the -- the speed information that's provided in the DDEC report when the event began?

A. It's questionable, yes, sir.

Q. Have you performed any calculations to determine -- that determine a different speed for the Americanos motor coach when the accident event began?

A. Yes, sir.

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Q. What is your calculation?

A. I looked at the path of the vehicle and made some calculations based on my estimates of whether or not the roadway was wet or dry; and my initial speed calculation at the first sign of physical evidence with a wet roadway was approximately 67 miles per hour, and my speed calculation with regard to a dry road had the speed of the vehicle at an initial velocity of approximately 69 miles per hour.

Q. Okay. So if I'm understanding you right, you're saying that your calculations show that if the road was wet, the speed of the motor coach when the

accident event began was 67 miles per hour?
A. Approximately, correct.
Q. And your calculations show that if the roadway was, I guess, completely dry that the speed of the motor coach when the accident event began was approximately 69 miles per hour?
A. Correct.
Q. Can you identify those calculations for me?
A. Yes. They were calculations that preceded the various technical bases that you and I discussed a little while ago. So if you've got the technical bases, then you should have gotten the calculations that went along with them. There you go. You've got

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them right there.
Q. Okay, good. All right. We'll go ahead and mark these as an exhibit just because we may need to -- may help later to refer to this if somebody is reading your transcript.
(Exhibit Number 15 was marked.)
Q. (BY MR. HAYNES) Okay. So I've marked as Exhibit 15 what's labeled "Campos versus Greyhound, Speed Calculations -- Dry." Can you identify that further for me?
A. Yes, that is correct.
(Exhibit Number 16 was marked.)
Q. (BY MR. HAYNES) Then I've labeled as Exhibit 16 a document titled "Campos versus Greyhound, Speed Calculations -- Wet." Can you further identify that for me?
A. Yes, those are my calculations.
Q. It sounds like whether the road was wet or dry, the calculations don't change a lot for the speed of the motor coach when this accident event began. Would that be fair to say?
A. That would be a fair statement.
Q. Are there any significant distinctions in your speed calculations between -- for wet and dry road at any other point in the accident?

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A. I'm sorry. I didn't understand that.
Q. Yeah, that was really bad. You know, you finish and you're listening to yourself. You go, that made no sense. You know, sometimes experts understand you even when you're not making sense.
What I'm trying to ask you is looking at Exhibits 15 and 16, are there any significant differences in the speeds that you calculated at any additional point past when the accident event began?
A. Prior to that or prior to the first sign of physical evidence?
Q. Well, after -- you know, you've got when the accident event began. Do you have calculations for before that point or is that when your calculations

begin?
A. That's when the calculations began. Then the calculations move forward through time and distance to get to the point of rest.
Q. What I'm asking you is, you know, the initial speed calculation of 67 for wet and 69 for dry are pretty close to one another. Are there any significant differences in your calculations between a wet and dry road at any point after that?
A. Yes. The answer to your question is yes, because as you step through each phase of the crash

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either looking at the -- the wet analysis or the dry analysis, you will see there are -- there are differences in the speeds of the vehicle as it completes each phase of the crash. The wet always has a slightly lower speed than the dry.
So, for instance, in the very next section you'll see I have the vehicle speed in the dry condition to be approximately 68 miles per hour; whereas, the speed of the vehicle in the wet analysis is traveling at approximately 66. But they're a line-by-line item where you can compare the vehicle speed as it goes through various phases.
Q. Thank you. Why did you prepare different calculations, one for wet and one for dry?
A. Because of the conflicting information that we had. We had various people that said the road was dry. Others had said it was wet.
Q. Okay. Why don't we just start with the Exhibit 15. If you can explain to me -- don't explain your calculations because that will just be a waste of time, but if you could explain to me -- for me, because I wouldn't understand it anyway. If you could explain to me what different speeds you arrived at at different points and what those points are, that would be helpful.

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A. Sure. I think the easiest thing to do is to -- you can look --
Q. I'll look at this one.
A. -- at Exhibit 14, and I'll take you through it. It will be pretty obvious when we go through it. But if you look at the very top, it says here "vehicle rolls to point of rest." So this is the phase where the vehicle is sliding out and rolling to its point of rest.
Q. This is your last calculation?
A. That's the last calculation. If you look down in about the middle of that calculation, you'll see a speed that says 23 miles per hour. Essentially the speed of the vehicle at the beginning of the point where it begins its sliding, slash, roll motion, the vehicle speed is approximately 23 miles per hour.

Q. Would this be the position or the speed when the motor coach is leaving the roadway and entering the median?
A. No.
Q. Okay.
A. That's at the point where it's fallen on its passenger side and it's sliding and spinning to its point of rest.
Q. So --

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A. In the final 61 feet. You'll see that at the very top of that section where it says "roll distance 61 feet."
Q. All right. I'm sorry. Can you tell me again then as far as where on the roadway or in the median this -- what this calculation of speed would apply to?
A. It's in the median. It's where --
Q. In the median?
A. It's where the bus has now fallen onto its side and is now sliding and spinning to its point of rest.
Q. All right. Then what's the next calculation?
A. Right. The other thing I wanted to point out to you is that the speeds are the same dry or wet. That's because the drag factor that you are using for that particular portion of the crash really isn't dependent upon whether or not the ground is wet or dry. So we both have in our hands a value that's the same, 23. Ultimately you're going to see the speeds, they'll start to change because we're talking wet versus dry conditions.
Q. On the roadway?
A. On the roadway. Same thing as you get to the next section which says the vehicle furrows in the median counterclockwise. Of course, that distance is

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44. Then in the box you'll see that the average speed is approximately 40 miles per hour.
Q. That's the same for Exhibit 15 and 16?
A. Correct. Then you'll see the next section is the vehicle yaws on the pavement in the counterclockwise direction, and the speed of the vehicle at the beginning of that event is an average of approximately 57 miles per hour in that 208-foot distance.
Q. And then on the wet calculations, it would be 55 --
A. Right. Right.
Q. -- miles per hour?
A. Exactly. Now things are starting to diverge.
Q. And can you be a little more precise about the location of the motor coach when you're calculating this particular speed?
A. I can be very precise on that. If we want to

take a moment and roll out my diagram, I'll show you exactly where those vehicle shapes are and how those were determined.
Q. Sure, that will be great and --
MS. DORMAN: This might be a good lunch break. What do you think? It's a little before noon. Would you want --

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MR. HAYNES: Whatever y'all want to do is fine. I'd like to get a little more done --
MS. DORMAN: Okay. Let's -- let's --
MR. HAYNES: -- before --
MS. DORMAN: -- keep forging ahead.
MR. HAYNES: Okay.
THE WITNESS: I'm going to take my mike off here.
Q. (BY MR. HAYNES) We talked about before the -- we got on the record that you would make us a duplicate copy of this humongous exhibit, right?
A. Yes, I will.
Q. And for the record, although it's not going to be attached to your deposition, we're going to call this Exhibit 17. Okay?
A. That will be fine.
(Exhibit Number 17 was marked.)
MS. DORMAN: That's not so bad.
THE WITNESS: Let's leave that right there.
MR. HAYNES: He's much more accustomed to handling this than you and I are.
MS. DORMAN: True.
A. So your question was where is that interval or where is that distance, and it's going to begin

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here where the vehicle is essentially parallel to the roadway. This is the bus shape. Then it's going to take it out to where the vehicle is just exiting the roadway at this point right here.
Q. (BY MR. HAYNES) All right. On your diagram, Exhibit 17, it's between skid mark -- what's labeled Skid Mark 5 and Skid Mark 9?
A. Correct.
Q. So basically as the motor coach is -- is entering the right shoulder?
A. Or it's already on the right shoulder.
Q. On the right shoulder?
A. Here is the edge of the shoulder. So the vehicle has already got its -- a bulk of the passenger side of the bus on the paved shoulder.
Q. Okay.
MR. HAYNES: I guess we should leave it out there --
MS. DORMAN: Okay.
MR. HAYNES: -- because he may need it.

MS. DORMAN: Should we just scoot it down just a tad?
MR. HAYNES: Yeah. Leave it out so you can still see your paperwork.
MS. DORMAN: Okay. Your microphone.

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Q. (BY MR. HAYNES) Okay. Then the -- the next calculations are for -- show what?
A. We're -- we're now in the various braking phases where we had the vehicle leaving tire marks depending upon what combination of tires were leaving marks. I had to account for the brag -- the drag or the deceleration of the vehicle in each of those individual phases. So we broke it up individually where we could see each of the various tires leaving marks on the roadway surface.
So what you're looking at is the braking phase where it says here the vehicle yaws on pavement clockwise. It does this for a distance of 26 feet.
Q. All right. What is the speed at that location?
A. And the speed at that location in the dry analysis is approximately 58 miles per hour.
Q. And for the wet analysis, it's 56 --
A. Correct.
Q. -- miles per hour?
A. Correct.
Q. All right. Can you identify on your diagram, Exhibit 17, that location?
A. Sure. This will be in this -- the very next shape. As we move backwards in time, each interval at

0060

the -- at the next position, that defines the boundaries of the interval and each calculation. So the last one we were working with ended with this vehicle position. So now we're talking about the very next vehicle position as we move back towards the north. So we're talking about the interval from here to here.
Q. So the position of the vehicle on your diagram, Exhibit 17, it's actually under the Number 17 is what you're referring to for the speed calculations that you just provided?
A. Correct.
Q. That say on your document "braking" with the number 6 in parentheses?
A. Correct.
Q. What does that number 6 refer to?
A. Section Number 6 for the braking. You'll see they go 6, 5, 4, 3, 2, 1 in the calculations.
Q. All right. So continuing to work backwards --
A. Uh-huh.
Q. -- what does the next calculation show?

A. Next calculation shows another phase of the braking, and we're looking at a travel distance of about 69 feet. Now the speed of the vehicle at the
0061
beginning of that interval is approximately 61 miles per hour.
Q. Or 59 miles per hour for a wet road?
A. Correct.
Q. All right. Can you identify the location on Exhibit 17 of the motor coach when those calcu -- where those applications apply?
A. Yes, that would be at this spot --
MS. DORMAN: Sorry.
A. -- right here.
Q. (BY MR. HAYNES) That's under the line with the number 15 on top of it --
A. Yes, I believe that's correct.
Q. -- on your exhibit.
Okay. What does the -- again, continuing to work backwards, what does the next calculation show?
A. Now we're at the vehicle is yawing in the pavement in a clockwise direction and braking over a distance of 42 feet. The initial speed of the vehicle at that beginning point is approximately 64 miles per hour in the dry analysis.
Q. And 61 miles per hour if the road was wet?
A. Correct.
Q. All right. Can you again show us on your
0062
diagram, Exhibit 17, the location of the motor coach for those calculations that are labeled "braking" numeral 4 in parentheses?
A. It would be moving backwards into the -- in time into the very next one. We --
MS. DORMAN: I scooted it forward a little bit so we would have more room to unroll.
THE WITNESS: Okay.
A. We last left off with the vehicle --
Q. (BY MR. HAYNES) I think -- I think Number 15.
A. At 15?
Q. Correct.
A. Now we're moving backward where we're in the vicinity of Stripe Number 14.
Q. On your exhibit?
A. Correct.
Q. Okay. Just so for clarification when somebody is looking at this later, it says Skid Mark 4. Then there's a line with the number 14 above it, and the diagram of the motor coach is below that that corresponds to "braking" numeral 4 in parentheses on your calculation?
A. Correct.

Q. Okay. The next calculation going backwards in time?
A. Then it says vehicle yaw on pavement clockwise braking. We're now in section 3. The speed of the vehicle at the beginning of that event is approximately 66 miles per hour in the dry analysis.
Q. 64 miles per hour in wet?
A. Correct.
Q. Again, can you identify that for us on your drawing, Exhibit 17?
A. Yes. I believe we're now going to be brought back into the ve -- next vehicle shape which will be near the vicinity of Number 13.
Q. Okay. So on your diagram, Exhibit 17, that -- that location is directly below where it says "piece of bearing cap E6" and also the line with the number 13 above it?
A. Correct.
Q. All right. What is the next calculation that you performed?
A. Okay. Now we should be on to -- I think we're at vehicle yaw on pavement clockwise, braking, Section 2. We're not at a distance of 61 feet, and the speed of the vehicle at the beginning of that event in the dry analysis is approximately 68 miles per hour.
Q. Or 66 for wet?
A. Correct.
Q. Okay. On your diagram, Exhibit 17, what do those speed calculations correlate to?
A. That would be now in this vicinity here, which is Stripe Number 11.
Q. Okay. That's the -- that's also located on your Exhibit 17 below where it says "E5 strap"?
A. Correct.
Q. Is that what that says?
A. That's what that says.
Q. Okay. All right. Then I think you have one final calculation going backwards in time. This is supposedly the beginning of the accident event that we talked about earlier?
A. Yes. But I think it's more accurate to say that that is the beginning of the first sign of physical evidence, and the vehicle yaws on pavement in the clockwise direction for a distance of 51 feet, and in the dry analysis the speed of the vehicle is approximately 69 miles per hour.
Q. Or as you said earlier, 67 miles per hour for wet?
A. Correct.
Q. Okay. And can you identify that location on

your Exhibit 17?
A. Sure. That would be the very first vehicle shape which is positioned under Stripe Number 10.
Q. Okay. May I see that? Just for the record, how did you arrive at your calculations for the coefficient of friction and drag factors on the roadway?
A. I relied upon some of the published data that I was provided, which we've talked about earlier, and the technical treatises that I used to arrive at the -- either the drag factor or the coefficients of friction that went into each of those sections. Then on top of that you've got to factor in the fact that the roadway has a down grade to it, that it has a vehicle that is sliding out, and there is a slip angle that has to be accounted for when arriving at the end results of the final effective drag factor that has to be used in this calculation before you can calculate the speed of the vehicle at each interval.
Q. Okay. Do you -- do -- can you identify the specific articles that -- I know there were several that you identified earlier and that you utilized in arriving at the coefficients of friction, drag factors, and slip angles.
A. Yes. The slip angles come from this exhibit

0066

which is Exhibit Number --
Q. 17?
A. -- 17. The slip angles and the motion of the vehicle that's used in that calculation comes directly from the measurements made from this drawing.
Then I used for the drag factors or the deceleration rates of the vehicle, I relied upon the NHTSA article "Heavy Duty Vehicle Brake Research Program Report Number 1, Stopping Capability of Air Braked Vehicles." I also relied upon the J. Stannard Baker Traffic Invest -- Traffic Accident Investigation Manual, and I also relied upon "Braking Performance of Heavy U.S. Vehicles." Those articles helped me with drag factors and coefficients of friction in the braking phase or the sliding phase while the vehicle was on the road.
Q. When you said that the -- the slip angle was calculated from Exhibit 17, what did you mean?
A. What I mean is that you have to first take the tire marks that were recorded either in the police information, the police measurements, or the photographs and my own work and put them on a scaled diagram. Then you can take a scaled measurement of the bus or a scaled model of the bus and place that on the diagram and then plot the path of the bus out

0067

based on the tire mark placement.
However, what you can see is that the

center of mass of the bus isn't aligned with the heading angle of the bus because the bus is in a broadside or near broadside slide. That difference between the heading angle of the center of mass of the bus and the front end or the way the bus is pointed is what's known as the slip angle. You have to account for that when using these various calculations to -- to determine speed because it is sliding sideways.

Q. I think we clarified that the -- the speeds of either 67 for a wet road or 69 for a dry road correspond to the first physical evidence on the roadway in terms of a tire mark, I assume, right?

A. That is correct.

Q. But you clarified that that's not when the actual accident event began.

A. That is correct.

Q. How far further back from the first tire mark do you believe there is any evidence for when the accident event began?

A. Well, we certainly have evidence on the roadway that is several hundred feet prior to the first tire mark on the roadway. I have added that information to my diagram as well.

0068

Q. Okay. Can you show me that?

A. Sure.

MS. DORMAN: How is that?

A. Yeah, the first -- first piece of evidence is here, and that's labeled "E1." That is a silver ring that was found by the police. This is a scale diagram. So you can see that based on these 100-foot intervals, you can see the difference from the first piece of physical evidence to the -- the tire mark on the roadway.

Q. (BY MR. HAYNES) Okay. So if I'm -- if I'm -- so it looks like that first piece of -- that Evidence 1, E1 on your diagram, that's an additional distance of it -- more than 200 feet further back?

A. Correct.

Q. When you say "silver ring," what does that -- what does that mean?

A. That --

Q. What's -- go ahead.

A. That's a ring that was identified and found by the police. I don't know exactly what that part is called, but the silver ring is the name that I put on the diagram based on the description given by the police.

Q. And when you say "silver ring," you're

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referring to a part on the bus as opposed to a ring you might wear on your finger?

A. Correct.

Q. All right. So basically let me ask while

we're talking about this, I guess, from the point of the first tire mark until the -- the bus enters the right shoulder, how much distance are we talking about? Sorry.

A. Let me grab my calculations.

Q. Well, I don't know if this will speed it up or not, but in Paragraph 3 of your report, you say approximately 300 feet, if I'm understanding that right.

A. Yes, that's correct.

Q. So we're talking about a total distance from the first evidence found by DPS on the roadway to where the bus, motor coach, entered the right shoulder of something in excess of 500 feet?

A. Correct.

Q. As part of your work in this case, did you review the MCI recall information about the tag axle?

MS. DORMAN: Object to form.

A. I saw some recall information. I saw someone referencing that in one of the depositions.

Q. (BY MR. HAYNES) If that's a part of your

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file, it would be on one of those disks that were furnished to you regarding someone else's deposition?

A. Yes, or it was part of some of the MCI documents that were provided to me.

Q. Do you have an opinion whether this recall information applied to the tag axle on this bus?

A. No, sir.

Q. You do not have an opinion?

A. I do not.

Q. Do you know whether you've read all the depositions in this case?

A. I know I haven't.

MS. DORMAN: Object to form.

A. I know that there are depositions that have come into my office I have not read yet. I intend to, but I have not read them at this point.

Q. (BY MR. HAYNES) Okay. How does that normally work in your office? Are they -- are the depositions read by someone else and summarized for you, and then you read the actual testimony of the ones that you think you need to or how does that work?

A. I read all of them.

Q. Okay.

A. I summarize all of them.

Q. All right. So they're summarized and read.

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Do you summarize them yourself?

A. I do. I -- in other words, I read them. I highlight the portions that I find useful or find appropriate for my usefulness in this reconstruction, and then I take and give that complete document to my secretary. My secretary whittles down the summary

into nothing more than just the highlights themselves.
Q. Okay. Excuse me. So do you highlight the summaries or do you highlight the depositions?
A. I highlight the depositions.
Q. Then you make a summary from that?
A. Right.
Q. I think somewhere in this room we've got your summaries, right?
A. Oh, yes. Yes, we do.
Q. Okay. Well, probably this would be a good time to -- to break for lunch, and maybe you can pull out your summaries for us because I know I don't have copies of those, and I have not marked them. We can -- I can be doing that while -- and then go to lunch. Is that okay with you?
A. That will be fine.
Q. Okay. Let's do that.
THE VIDEOGRAPHER: Off the record at 11:56 a.m.

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(Recess taken, 11:56 a.m. to 12:46 p.m.)
(Exhibit Number 18 was marked.)
THE VIDEOGRAPHER: On the record at 12:46 p.m., beginning Tape Number 3. I'm sorry. Back on the record with Tape 2.
Q. (BY MR. HAYNES) Mr. Rucoba, just to clarify, Exhibit 17 will not be attached to your deposition, but you're going to retain it in your custody and then you're going to make us a duplicate copy, correct?
A. That will be fine.
Q. Then we've marked the deposition summaries that you've produced today as Exhibit 18; is that correct?
A. Correct.
Q. The way I understood your testimony before lunch was that you prepared those yourself after reading the deposition transcripts and you try to include -- try to include in your summaries whatever you think is significant?
A. Correct.
Q. Okay. Do you want to give those back to me, and I'll get them out of your way?
Have you been hired as an expert in other motor coach accidents?
A. Yes, sir.

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Q. I think you talked about being hired by lawyers on behalf of MCI a couple of times in the past besides this case.
A. I think that's --
Q. Right?
A. -- that's correct.
Q. Have you worked in other motor coach accident cases in addition to this one and those two?

A. Nothing beyond those that I've already mentioned.
Q. So three times?
A. Approximately --
Q. Three or four times?
A. Approximately three or four times, sure.
Q. Have any of those cases other than this one involved allegations of an unlocked tag axle or steerable tag axle issues?
A. No, that has not been an allegation in the past crashes that I've investigated. I have -- just for point of clarification, though, I have reconstructed other crashes involving motor coaches wherein I was not necessarily hired by attorneys representing a motor coach.
Q. About how many other cases, then, involving a motor coach?

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A. I can recall one for sure. There's probably a couple in my past above that, above and beyond that.
Q. So we're probably talking five or six total during your career?
A. That would be a fair estimate.
Q. None of those involved issues related to an unlocked tag axle or a steerable tag axle?
A. Correct.
Q. Before this case, had you ever dealt with those issues in any other capacity?
A. No. I've never seen that allegation, nor have I ever seen a failure or alleged failure of a tag axle being a part or a contributor of a crash.
MR. HAYNES: Objection, nonresponsive.
Q. (BY MR. HAYNES) Have -- I guess what I'm asking is have you ever investigated either as a part of a lawsuit or in any other capacity steerable tag axle issues or locked or unlocked tag axle issues?
A. No, sir.
Q. How did you educate yourself about steerable tag axles for this case?
A. Well, first off, just through the initial evaluation of this particular bus and my inspection. I've had -- then above that, I've had conversations with engineers from MCI to understand the purpose of

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the tag axle and how this particular tag axle system works. And then above and beyond that, I've evaluated the -- the dynamics of the bus under the simulation of a tag axle failure either through the work done by Mr. Granat or the work done by your experts.
Q. What engineers at MCI did you discuss the tag axle issues with?
A. Mr. Hoogestraat.
Q. Anyone else?
A. There was a service manager that was

assisting me and Mr. Hoogestraat at the exemplar vehicle inspection that we conducted in California. That was just merely an assistance and just some clarification on the various parts that were removed from the driveshaft so I understood what they were properly called.
Q. That is what the service manager helped you with?
A. Yes. Yes.
Q. Do you remember his name?
A. No. Not off the top of my head, I do not.
Q. And then you also met with Mr. Hoogestraat?
A. Yes, sir.
MS. DORMAN: Hoo-ge-strat.
MR. HAYNES: Hoo-ge-strot -- strat?

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MS. DORMAN: Well, either one.
MR. HAYNES: It's a tough one.
MS. DORMAN: Hoogestraat.
MR. HAYNES: Hoogestraat.
MS. DORMAN: H --
Q. (BY MR. HAYNES) How --
MS. DORMAN: H-O-O-G-E-S-T-R-A-A-T.
Q. (BY MR. HAYNES) How many times have you met with Mr. Hoogestraat?
A. I think we've met face to face, I think, one time. We've talked over the phone a handful of times.
Q. Was the face-to-face meeting at the exemplar vehicle inspection?
A. Yes. I don't remember if he was there the day we did our crash vehicle inspection. He may be -- he may have been there as well. I don't remember if he was there for that inspection as well, but for sure he was there when we did our exemplar inspection in California.
Q. Then you said you've looked at the dynamics of the bus as they relate to the tag axle, alleged tag axle failure, through the documents you have from Mr. Granat's testing and who else?
A. And the testing that was performed by your experts.

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Q. Have you talked to -- well, I assume you haven't talked to any of our experts, right?
A. I have not.
Q. Have you talked to Mr. Granat?
A. Yes, I have.
Q. Have you met with him?
A. No, only talked over the phone.
Q. Was that before or after his testing or both?
A. It was both.
Q. Before and after?
A. Yes, sir.
Q. Did you have any input in the testing that he

performed?
A. Only, I think, in a general sense because I think Mr. Granat was relying upon my reconstruction not so much as a re-creation of the events but just to understand what my findings were with regard to the reconstruction.
Q. So you've -- you've been to the exemplar vehicle inspection. You've looked at Mr. Granat's testing as well as the experts for Americanos. Have you examined any documents regarding tag axles or anything like that?
A. Sure. I've seen some of the MCI documents that provide a description of the tag axle, the

0078

purposes of the tag axle. Those kinds of things I've seen, yes, sir.
Q. Are those documents that were submitted directly to you or that you've just reviewed in other experts' files?
A. I've seen those documents in other experts' files, but I was originally provided with those same documents.
Q. Okay. Can you help me identify those?
A. Sure. I think it would be on some of the disks that we've already previously marked.
MS. DORMAN: Do you want me to roll this up?
MR. HAYNES: I guess for the moment or enough to find the disks.
MS. DORMAN: How is that?
MR. HAYNES: That's fine.
MR. TIJERINA: I'll see if I can find the disks.
(Discussion off the record, less than one minute.)
Q. (BY MR. HAYNES) Here's some MCI disks.
A. Yeah. It's going to be hard to tell you exactly where those documents can be found. I will -- I will pull out the -- the disks that I think are

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going to contain that, and it will -- the best I can say right now is it will be on one of those.
Yeah. I'm sorry. The best I can tell you right now, the documents are going to be contained in some of these disks that I've -- that I've got here. Because they're all -- the reason I've got so many of them is because they do say MCI documents that have been produced in this particular matter.
Q. What we've got here are some disks that are labeled operators manual, parts manual, maintenance manual, and I think it's my understanding that we have all of these documents already. I guess what I want to make sure of is that there is not any additional documents that you were provided regarding the tag

axle that haven't been produced in this case, and Ms. Dorman is saying that's correct, correct?

MS. DORMAN: Yes, it is. I didn't know if you wanted me to answer out loud. Just to shortcut things, you are correct.

Q. (BY MR. HAYNES) Since you hadn't dealt with the tag axle issues before, what was the -- what was the first thing you did when you got involved in this case to try to educate yourself about that?

A. It began with the gathering of the information that was generated on the day of the

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crash. So I studied the police file, studied the scene photographs that were taken on the day of the crash, and then started to formulate in my mind what marks were being made by which tires that could be seen in those particular photographs.

Q. I guess what I'm -- what I'm getting at is how did you educate yourself about how the -- the tag axle works, the tag tires work, you know, the locking and unlocking mechanism works. You know, that's not all -- that's not going to be found in the police -- DPS crash report. That's going to be found in other documents, right?

A. I would agree with that, and it's in those documents that I -- on those disks. They give you a basic description of the -- of the way the tag axle works, the conditions on which it locks and unlocks under normal operations. I also got some additional information just from my conversations with Mr. Hoogestraat as to the mechanisms and how the mechanisms work from -- after reviewing or after the initial review of the documentation that I was provided from things such as the maintenance manual.

Q. Would it be fair to say that one of the initial things that you did was gather information from MCI and talk to an MCI engineer, specifically

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Mr. Hoogestraat, regarding how the tag axle works, how it's put together?

A. Yes, but it actually began even earlier than that. It actually begins with looking at the photographs that were taken on the day of the crash to understand what components have been displaced, what components are not in their as-designed position that gave me the initial understanding of something has -- is now out of alignment; something has failed as the vehicle is laying on its side. And it's that initial process that is sort of a step-by-step process that ultimately led up to the review of the documents, the conversations with Mr. Hoogestraat, the inspection of the bus. So this -- all of those things and -- combined provided me with the knowledge about the tag axle and its operations and the way it looked post --

post-crash.
Q. Have you been provided any information regarding the Americanos testing that was done by Larry Yohe at the Bosch test grounds?
A. Yes, I've been provided with the videotapes, as I understand it, of the work that was performed by Mr. Yohe. I have been provided with some of the materials that were written and generated at the time of those tests, and I've looked at that. That was
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material that was attached to the deposition of, say, Mr. Fugger. It's my understanding that there are other depositions that are coming to me of folks that participated or have knowledge about that test, such Mr. Reuschling, Mr. Yohe. I intend to review those as well.
Q. As it stands right now, do you have any criticism of the testing that was performed?
A. Yes. Based on the information I've been provided, I think there are a couple of things that can be said about the tests. The first and foremost is that I believe the tests are unscientific. What makes them unscientific is that there has been an intentional instrumentation added to the vehicle, the test vehicle, which has skewed the results by artificially applying forces to the tires on the tag axle.
If the purpose was to monitor and record the dynamics of the bus with an unlocked tag axle, it's bad science to introduce a hydraulic device which applies external forces above and beyond the normal driving forces that this bus would see and applying those forces in a way that renders the results useless.
Q. So how --
0083
A. The --
Q. -- would you have done it?
A. The other -- the other thing is that if you look at the test data itself --
Q. Well --
A. -- that the -- the issue that comes out of the data is that it's clear that even though they were still turning the axle with this external device, that it had no bearing on causing the bus to spin. The reason that the bus spins out of control is because the drive axle was locked up under the two tests where you can see that the manipulation of the tag axle has no bearing on causing that spin.
I'm sorry. I didn't mean to cut you off, but those are the two main issues that one can see from looking at those tests.
Q. I think you were saying with respect to the first issue that it was unscientific to introduce an

artificial way to turn the tag tires to see how the bus would react?
A. Correct.
Q. So my question was if you were going to try to do some type of testing to evaluate the handling of the bus when the tag tires are turned, how would you have done it?

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A. Well, I'm going to go back to the purpose of the test as I read it in the testimony of Mr. Fugger. If the purpose of the test is to monitor the dynamics of the bus in the presence of a locked or unlocked tag axle, then that's what you do. You simply lock or unlock the tag axle. It's the introduction of external instrumentation that renders this -- the test useless and unscientific.

So to answer your question directly, if that was my purpose, I would have never put on external instrumentation which cause some external forces to be applied to the tag axle because you're now skewing the data. You're skewing your results by introducing that external force.

Q. Let me ask --

A. I think a better -- I think a most representative type of test program would be, say, the one that was conducted by Mr. Granat where Mr. Granat truly let the bus operate under the normal driving conditions and let the tag axle in its unlocked state react to whatever driving forces were out there on the roadway surface without the addition of any external instrumentation.

MR. HAYNES: Objection, nonresponsive.

Q. (BY MR. HAYNES) My -- my question,

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Mr. Rucoba, is if you were attempting to evaluate the handling of the bus if the tag tires were turned, how would you have accomplished that test?

A. I would have accomplished it the exact same way I just said. If you're trying to determine how the bus handles in the presence of an unlocked tag axle, which means that it would be free to turn or not turn under normal roadway conditions, I would have run it the way that Mr. Granat ran it. I would not have added an external instrument to the bus to cause external forces to be applied to the tag axle that aren't present. In other words, none of these buses are equipped with this added ram that applies forces to the tag axle. So, therefore, an experiment that does that is creating an artificial situation.

MR. HAYNES: Objection, nonresponsive.

Q. (BY MR. HAYNES) Help -- help me understand this in case we're talking past one another. It's my understanding that a tag axle can be unlocked, and that does not necessarily mean that the tag tires are

going to be turned; is that true?
A. No, that's not true.
Q. Okay. Explain it to me.
A. If you look at the way that this tag axle is designed, under low speed conditions, this tag axle is
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allowed to turn through an angle, through various angles at low speeds. That is the purpose of the tag axle.
Q. Okay. So if the -- it's your understanding that if the tag axle is unlocked that the tag tires will -- will turn?
A. Yes, as designed under a certain speed, yes. That is the intention of unlocking the tag axle to allow for maneuverability. That maneuverability comes in part due to the fact that you are able to let the tag axle's wheels and tires attain an angle as any turning -- in a turning mode.
Q. How is that angle controlled when the tag axle is unlocked?
A. It's controlled through normal tire forces, roadway forces, and the motion of the vehicle itself turning.
Q. So if I'm understanding you right, you're saying that the only way to evaluate the effect of turned tag tires on the handling of the bus when the tag axle is unlocked is just to unlock it and see what happens?
A. Yes. If you're going to evaluate it in a scientific manner to determine what effect an unlocked tag axle has on the dynamics of this particular bus
0087
through whatever maneuver you're going to create, that would be the proper way to evaluate it in a scientific fashion.
What makes it unscientific is when you add instrumentation which applies forces which are not going to be present or forces that are above and beyond the normal driving conditions.
Q. Do you know from Mr. Granat's -- Granat's testing if the -- the tag -- I understand the tag axle was unlocked in his testing?
A. Yes. In my discussions with Mr. Granat, he ran a number of tests, some of which had the tag axle locked, some of which -- some of which had the tag axle unlocked.
Q. You were not present during that testing?
A. I was not.
Q. Have you reviewed all of the documentation regarding his testing?
A. Regarding his testing?
Q. Yes, sir.
A. No. I have only seen the test footage and then had discussions with him.

Q. What other documentation do you understand is out there?
A. It's my understanding that he had several

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pieces of instrumentation affixed to the bus to record the dynamics of the bus during his various tests, and all of that material I have not reviewed.
Q. Has it been provided to you yet?
A. It has not been provided to me yet.
Q. Have you requested it?
A. Yes, I have.
Q. What's your understanding of when it's going to be provided?
A. I don't have an idea of when I'll be getting that.
Q. Do you know whether all of his test runs were instrumented and documentation recorded?
A. Yes, it's my understanding that all of his test runs were instrumented and recorded.
Q. Does that include videotaping?
A. Yes.
THE VIDEOGRAPHER: I have about two minutes on tape.
MR. HAYNES: Okay. Go ahead.
THE VIDEOGRAPHER: Off the record at 1:10 p.m., ending Tape 2.
(Recess taken, 1:10 p.m. to 1:15 p.m.)
THE VIDEOGRAPHER: On the record at 1:15 p.m., beginning Tape 3.

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Q. (BY MR. HAYNES) What is your understanding of how Mr. Granat's test bus was instrumented?
A. I don't know if I can describe all of the instrumentation that he had on there because he had quite a bit, but I believe he had told me that he had a steering potentiometer, a 3-axis accelerometer, a GPS, a 3-axis speed sensor, a roll rate analyzer, and numerous cameras either on-board or following or off-board, and I think that's it in a nutshell. There -- there may be more, but that's all I can recall right now off the top of my head.
Q. Is it my -- it's my understanding from hearing you talk about this that Mr. Granat tested the handling of the bus both with the tag axle locked and unlocked?
A. That is my understanding.
Q. How did he simulate a driveshaft failure?
A. Simulate a driveshaft failure? I don't believe he did simulate a driveshaft failure. His purpose was to simulate a dynamic condition where the axle -- tag axle was locked and unlocked.
Q. So in his test -- testing when the tag axle was unlocked, the driveshaft was -- was still working?
A. That is my understanding.

Q. It's your understanding from watching the
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video and talking to Mr. Granat that there was no difference in the handling of the test bus that he drove between when the tag axle was locked or unlocked?
A. I think there may be subtle differences between the two. I think Mr. Granat can get into those subtle differences. On a global sense, I can tell you that Mr. Granat -- Mr. Granat's findings were that even under aggressive conditions the unlocked tag axle and the maneuverability of the bus under those conditions was such that it was controllable; it was something that a driver would be able to drive through various type of maneuvers and would be able to bring the bus safely to a stop even in the conditions where the tag axle was unlocked.
Q. Did you find out from Mr. Granat when the tag axle was unlocked, the degree of movement of the tag tires in any of his test runs?
A. I did not go into that level of specifics with him. I think that would be a question more appropriate for him.
Q. Have you done anything to date other than watching the video and talking to Mr. Granat, have you done anything to validate his testing?
A. No, sir.
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Q. Would it be fair to say that you really couldn't validate his testing until you've had a chance to at least look at the data --
A. Sure.
Q. -- produced from his testing?
A. Sure, I'd like to see that.
Q. Did you and he discuss any problems with the tires?
A. I am sorry. I don't understand what you mean.
Q. It's my understanding that there was a right rear tag axle tire that was changed either before, during, or after the testing. Do you know anything about that?
A. I saw that. I think that was in Mr. Fugger's deposition. I have not gone into any discussions with Mr. Granat about the -- about the tag axle tire and what happened to it during this test or after the test.
Q. He didn't bring it up and you didn't know about it; so, you didn't ask him about it?
A. Right, I didn't go into that level of detail.
Q. Did Mr. Granat tell you that all of his test runs were videotaped and instrumented and recorded?
A. Yes, I think that he did mention that
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everything that he had done has been recorded, but, again, that's a good question to ask Mr. Granat, not me.

Q. What did you recommend to Mr. Granat about the testing when you talked to him before it happened?

A. I didn't make any recommendations with regard to the testing. I merely provided him with an understanding of my reconstruction.

Q. How do you characterize Ms. Morado's braking in this accident?

MS. DORMAN: Object to form.

A. It appears that, at least at the point where physical evidence is being created, that she has applied the brakes to the point where some or all of the tires are creating brake marks. At some point in time, it's clear that she must be letting off the brakes because she's put the vehicle into a counterclockwise slide. In order to do that, she has to have released the brakes at some point in time.

Now, prior to the first sign of physical evidence, it's my -- my opinion that Ms. Morado must be applying both steering and braking based on her testimony and based on the trajectory of the bus that I see at the first sign of physical evidence.

MR. HAYNES: I think we are going to

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need this now. Maybe we need to roll up this end and start at the beginning.

MS. DORMAN: Okay.

A. We're going to start on this end this time?

Q. (BY MR. HAYNES) Yeah, we're going to start on the --

A. All right. This side is fine.

MS. DORMAN: I'll just put this as the holding spot.

Q. (BY MR. HAYNES) All right. So you -- if I understood what you just said, between, on your diagram, Exhibit 17, between the E1 and the first tire mark, you said that she was, based on her testimony, steering and braking?

A. Right, but I want to make sure that we're clear on this. It's clear from the testimony that Ms. Morado says that she begins to apply her brakes and she applies some steering. At some point in time when the event starts to unfold, it's clear from her testimony that she applies multiple steers and throughout this event and all the while applying brakes throughout this event.

Now, where that first time that she touches the brake and applies -- this steering happens, I can't tell you because there is no physical

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evidence that will document the path in that -- in that phase of the -- phase of the crash. I can't tell

you if it begins at E1, if it began prior to E1. There's just not enough physical evidence.

But what you can see is when you first look at the physical evidence, the marks that are being made by the tires and the trajectory of the bus tells you that Ms. Morado is, indeed, coming from the right side of the road and has applied some amount of steering and braking leading up to the very first sign of physical evidence.

Q. Why do you say that other than her testimony?

A. Look at the tire marks and look at the path of the bus on the tire marks. If the bus was --

Q. I'm sorry. I thought you were talking about before the tire marks.

A. I am. I am.

Q. Okay.

A. Let me -- let me just finish.

Q. Go ahead then. I'm sorry.

A. If you look at the path of the bus, you see that the trajectory of the bus is such that even though she is in a right turn or she's leaving marks with her right side and is turned to the right in a clockwise yaw, the center of mass of the bus is moving

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to the left; it's moving leftward in the lane. Then it begins to move off towards the rightward direction. That tells you that she must be coming from the right side of the road somewhere and then puts in a right steer as -- then begins to create the tire marks that we see. She, herself, says in the testimony that she left the right side of the road at one point in time and encroached into the left lane in a reversal, steer reversal. None of that is documented in these particular tire marks. So, therefore, those events must be happening before the first sign of physical evidence.

Q. What you're saying is that could go back well beyond the 200 feet before the first tire mark?

A. Sure. Yes, indeed.

Q. Do you have any idea how far back the very -- the accident sequence began?

A. No, no, I don't. We don't have enough physical evidence to be able to plot that path.

Q. Do you have any, like, approximation of what the maximum distance back could be?

A. No, it depends on what her trajectory looks like and how -- how the path deviations from left to right were laid out on the -- on the roadway surface.

Q. Would -- what's the very first thing that's

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documented in any of the testimony to have happened in this accident sequence?

A. Based on Ms. Morado's testimony?

Q. Any -- or witness or anyone.

A. I think if you let me look at the summary that I prepared for Ms. Morado, I think I can tell you what she said. Well, the first thing that she says is on Page 103 of her first deposition, and she -- and the question is, "When you heard this noise, what did you do as a driver?"

Her answer is, "I held myself strongly on the steering wheel and applied my brakes."

And then the question is, "Do you know if you applied the brakes lightly or did you apply the brakes hard?"

Her answer is, "I did apply my brakes strongly but not -- not in a manner that I -- that my -- that I would go all the way down."

Q. Okay. So the very first thing sounds like it was a loud noise.

A. Right.

Q. That at least alerted someone, including Ms. Morado, on the bus that something had happened?

A. Correct.

Q. And where that loud noise happened on this

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diagram, it's impossible to say?

A. Correct.

Q. It may even be further back off how far back the diagram goes?

A. Correct.

Q. Which would be -- how far back does this diagram go from where the vehicle went off on the shoulder?

A. Well, my -- my ve -- my drawing begins at Station 000. I think if you look at the 100-foot intervals, you'll see my diagram goes several hundred feet to the south.

Q. It looks like she went off onto the right shoulder some -- over 600 feet from where your diagram begins?

A. Correct.

Q. Okay. I want to talk with you about the tire marks. And your Exhibit 17 is great, but since I don't have one yet of my own and I want you to mark on some of these pictures, I'm going to have to use some of these pictures that I was provided. I guess they are copies of yours. What I would like you to do is -- is identify for us first off these photographs or if there is a better one in your file that you brought with you here today, the very first tire mark on the

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road.

A. Let me get out my set of --

Q. Sure.

A. -- tire mark pictures.

Q. You know, if it helps just to kind of get this going, what I'm going to be asking you to do is

to identify and mark on the photographs each tire mark beginning 1, subsequently from 1 through however many there are.
A. On each photograph?
Q. Right.
A. Ooh, that's a lot.
Q. Yeah.
A. This -- these are -- these are all of the photos that I have that are the best pictures that show the tire marks in sequential order.
Q. I don't want to mess up your photographs, but -- well, let's start going through them and then we can mark them if we need to and --
A. Okay.
Q. -- we'll see how -- how it works.
A. All right. The first sign of physical evidence that's recorded by the police is -- that's one of them. And the way I've aligned the photos is if you are walking in the direction of travel of the

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bus. So just to give you an idea, you'd start with this one. Of course, as you start moving closer, that would be the next picture that you would see.
Q. All right. And if -- I guess what you're referring to as the first tire mark is this up here or something further back?
A. The one that is marked with the "RP" or --
Q. Okay. Is that the -- is this the best photograph that you have of the first tire mark?
A. There's a couple of others. I mean, that -- you're a little closer to it there. You're right on top of it there. That would be a fair representation of the very beginning of the first tire mark.
Q. This one?
A. All three of them.
(Exhibit Numbers 19, 20 and 21 were marked.)
Q. (BY MR. HAYNES) All right. So Exhibits 19, 20, and 21 show the first tire mark; is that correct?
A. Yes, that's correct.
Q. And is -- is that also shown on your Exhibit 17?
A. Yes, it is.
Q. Where is -- where would that be on Exhibit 17?

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A. That would be the -- do you see where it says Skid Mark 1 and you'll see the beginning of a pinkish -- pinkish line? There you go.
Q. Okay.
A. Right.
Q. All right. So on Exhibit 17, it's -- it says Skid Mark 1?
A. Uh-huh.

Q. Then inside the horizontal for the bus --
A. Right. Right.
Q. -- there's a pink line?
MS. DORMAN: Thank you.
Q. (BY MR. HAYNES) How would you characterize that first tire mark?
A. It appears to be a locked wheel tire mark being made by the tag axle on the right side.
Q. Then in Exhibit 17, it looks like you've got another pink mark on the left side of the inside of the bus. What does that represent?
A. Those are orange dots. Those are just dots that I've put on the tires just to help me with the color coding that's going to take place a little further down the -- down the road, color coding of the tire marks, that is.
Q. Okay. I'm color-blind.

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A. Oh, okay. Okay.
Q. I try to get away with not revealing that, but it's not going to last long.
A. You're not --
Q. Okay. So --
A. -- the first person I've had to -- had to help along with that.
Q. Okay. So where it says --
A. Okay.
Q. Where it says Skid Mark 1 --
A. Yes, there's --
Q. -- you said there is something in here that reflects that first tire mark.
A. Right.
Q. Can you point at it for me?
A. Yeah, you bet. Yeah. What I'm referring to is you see this mark right here, that's this pink -- that's a pink -- that's a pink line. This pink line goes all the way back to here where it says Skid Mark Number 1. That's sort of the start of it.
Q. Okay. I got you.
A. Then there -- what you were asking about earlier are these -- you'll see there -- actually I've put dots. There's colored dots in the center of the tires. The reason for the colored dots is just to

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help me with the colored -- colored skid marks that are going to appear later on down the road.
Q. With what tires are causing what skid marks?
A. Exactly. It's going to help me identify tandems and tag axles and front tires.
Q. Okay. May I see those three photos?
MS. DORMAN: Sorry.
Q. (BY MR. HAYNES) What do you see in these three photos that led you to the conclusion -- or let me ask it this way: What is the basis for your

conclusion that the first tire mark shown in Exhibits 19, 20, and 21 was made by the right side tag axle tire?
A. The fact that it's a single tire mark, it tells me that it's something that has to be made by one of the axles on the bus that has only one tire. Otherwise, I would have expected to see two tire marks if it was made by a tandem.
The other thing is, is that I know it's not the front tire on the right side which would be the only other candidate. Now, that tire ultimately leaves a mark on the pavement as well, but that's coming down the road within the next hundred feet or so. So by process of elimination, you can tell that's got to be the tag axle.

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Q. Okay. You feel pretty confident in that?
A. Yes, sir.
Q. Then why do you say it's a locked wheel tire mark?
A. The fact we're creating a noticeable skid mark on the pavement.
Q. Just to get real basic, what other types of tire marks are there besides a locked wheel tire mark?
A. You can have things such as yaw marks.
Q. What other options are there?
A. You can have some things such as a slight scuff mark if you want to call it that. I think those are three main descriptions that I've seen describing various types of tire marks that appear on the roadways.
Q. How do you distinguish a locked tire mark from an un -- a tire mark that's not a locked tire mark?
A. Well, a completely unlocked tire mark won't leave a mark. The locked tire mark we know is leaving a mark because it's leaving this noticeable transfer of rubber on the roadway surface.
Q. What exactly are we looking at in Exhibit 19 other than the "RP1"?
A. What you're looking at is the beginning of

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the mark. It starts out faint. It's identified by the -- there is an orange dot that is being made by the police. Then you'll see another dot that is just to the --
Q. Top of it?
A. -- to the right -- to the left of the -- of the tire mark itself on the pavement.
Q. Is it normal that the further away you get from it the easier it is to see it?
A. Yes.
Q. Okay.
A. Yes.

Q. Because I can hardly see anything in -- in Exhibit 19.
A. Yes, that is true.
Q. And in Exhibit 21 between those two dots, those two dots on the pavement, it looks almost like a thin line. Is that what you're seeing or are you seeing something else with trained eyes that I don't see?
A. There is some width to it. Yes, there's actually a couple of lines adjacent. There is a couple of lines parallel to each other. When you look at that picture, there is one that's darker that's to the right, and there's a lighter one that's to the

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left.
Q. And is that, in your experience, what a standard locked tire mark looks like?
A. Sure. In other words, you're making marks. There are some striations that are running parallel or longitudinally to the mark itself. Now, they don't always necessarily begin by making striations that are longitudinal and clearly definitive at the very beginning. It actually tends to be more like what you see here where they're faint at the beginning and get darker as the mark -- or as the tire slides along the pavement.
Q. So what you think Ms. Morado is doing that causes that tire mark is that she is pressing hard on the brakes?
A. Yes.
Q. Is there any way to quantify the degree of braking that she's doing to leave that first tire mark?
A. Not in terms of pedal force, but I can tell you it's enough to lock up that tag axle on that right side.
Q. How does that work where you press the brake hard enough to lock up one tire on the right side but not another?

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A. That's a good question. There could be some problem with the bus itself, the maintenance issues of the bus itself in that there is some imbalance in the brake system.
Q. Have you examined that or looked at that issue?
A. I have not, nothing beyond the brake evaluation that was performed by the police.
Q. That had a question regarding the front left side; is that correct?
A. They had issues with regard to the tandems on the left and the Number 3 axle on the left.
Q. But nothing on the right?
A. I don't recall anything on the right.

Q. So that would be the explanation then for only locking up the tag axle tire on the right if she's braking that hard?
A. If she's braking that hard, then there must be some imbalance on the right side and the left side. There may be a maintenance issue there, an imbalance issue there with regard to her brakes being able to lock up.
Q. Is there any other explanation?
A. Nothing that I can see beyond that.
Q. Does the -- the type of brake mark that we're

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seeing, is that affected by whether or not the tag axle was locked or unlocked?
A. No. I would think that you could make this kind of mark under either conditions if you're able to get the tag axle to lock. I'm talking about the tire itself to lock, not -- not the -- the axle assembly itself or unlock. I would think you would be able to make this mark.
Q. If I'm hearing you right, you're saying that you think you could make that mark whether the tag axle was locked or unlocked?
A. Right.
Q. What's your basis for saying that?
A. Well, the -- the tag axle system itself isn't connected to the brakes. They're independent of one another.
Q. Help me out with that.
A. Meaning that if you unlock the tag axle assembly and allow it to rotate, you're still able to lock the brakes up and create a tire mark just as if it was locked and you were able to create a tire mark that way. You can apply enough brakes to lock -- enough braking power to lock up the tag axle on the right side whether or not the tag axle is -- the tag axle assembly is locked.

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Q. I think I misunderstood you. I thought you said the tag -- you're saying the tag axle itself is not connected to the brakes?
MS. DORMAN: Object.
A. Right. The tag axle locking system is not connected to the brake system.
Q. (BY MR. HAYNES) So you're saying that wouldn't -- whether it was locked or unlocked wouldn't affect the tire mark?
A. Correct.
Q. Or brake mark?
A. The creation thereof.
Q. If the -- I guess we can agree that the -- at this -- by this point the driveshaft is disconnected on the transmission end, right?
A. I think that's fair to say. I mean, we don't

really know for sure. The physical evidence that we have that supports when that for sure has taken place is yet to happen. We haven't -- we haven't gotten to that point on the roadway yet, but certainly at this point in time, there -- we have the driver who says that she's hearing a loud noise. I think that would be reasonable to say that that means that the driveshaft has come undone at that point in time.

Q. How would the steering of the bus be affected

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at this point if the driveshaft has come undone?

A. Again, the steering system on this bus isn't connected to the driveshaft system. So Ms. Morado has complete control of the steering system. We know that based on the fact that she continues steering to the right, and we know that based on the fact that she ultimately puts the vehicle into a slide in the final left steer.

Q. Well, it's not -- it doesn't have to be all one or all the other, right?

A. I'm sorry. I didn't understand that.

Q. Well, you said that because there was some -- the way I understood you was because there is some steering capability that it hasn't affected steering. My comment was, well, it doesn't have to be all one or all the other. There could be some effect on steering without it rendering her ability to steer the vehicle -- without rendering her unable to steer the vehicle?

A. I would say no, because they're independent systems.

Q. All right. So if I'm hearing you right, you're saying that there is absolutely no impact on her ability to steer the vehicle at the point of the first tire mark?

A. Correct.

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Q. And did you use your own or anyone's vehicle dynamics modeling to reach that conclusion?

A. I used my own inspection of the vehicle and looking at the physical evidence that was created on the roadway surface.

Q. What was it about your inspection of the vehicle that led you to that conclusion?

A. Well, just looking at the way that the vehicle systems are configured, number one. It's clear that the driveshaft has no bearing on the steering system of this bus. Then also looking to make sure that the steering system and the linkages that were in place on this bus were there and that the system was functional. Then, of course, just looking at the physical evidence in the path of the vehicle tells you that the vehicle is responding to the inputs by the driver.

Q. There's been some discussion of -- in some of

the depositions of wavy tire marks. You've seen that, right?
A. Oh, yes.
Q. Are there any wavy tire marks to be found on the roadway?
A. Yes, the marks that we're talking about apply to the marks that are being created by the tandem axle
0111
on the left side.
Q. To your knowledge, is anybody claiming that this first tire mark has any wavy characteristics to it?
A. I recall somebody, one of your experts talking about a waviness to the mark itself at the very beginning, yes, sir.
Q. What is -- what is your understanding of what a wavy tire mark looks like? I didn't -- I didn't really hear you mention that when you were talking about the three different kinds of tire marks. You said a locked wheel tire mark. There's a yaw mark and a scuff mark.
A. Yeah. Right. I think that what we're specifically talking about is the mark that's being made by the tandem. It's an unusual tire mark. It's not one that you generally run across in typical accident reconstruction journals. And it's a photos that I can show you of the tire marks that are being created in a side-to-side fashion. Those are the wavy marks that I am referring to and can only be created by the effect of the driveshaft rotating while still connected to the differential on the Number 2 axle.
Q. What -- what is the -- the next tire mark?
A. That appears on the roadway surface?
0112
Q. Yes, sir.
A. The next tire mark of note is the -- the one that's being made by the right front tire. This is a photo that I think help illustrates that point. In that photo you're looking back in the opposite direction of travel, and you can see that the tire marks are converging on one another. They are coming from a single point, which means they must be coming from the same side of the vehicle, and they --
Q. Okay.
A. -- cannot be made by a tandem.
(Exhibit Number 22 was marked.)
Q. (BY MR. HAYNES) All right. We're talking about Exhibit 22?
A. Yes, sir.
Q. And can you show me on here what you're talking --
A. Yeah.
Q. -- about?
A. Yeah, I can, indeed. Okay. This mark right

here is the one that is being made by the --
Q. Are you talking about the one on the inside?
A. Yes. Yes.
Q. Inside left as we're looking at the photo?
A. Yes. That's the one being made by the tag
0113
axle, okay, the one we were just talking about earlier, but if you look at this one that's out here, it looks like --
Q. To the left of it as we're looking at the photo?
A. Yes, sir. It looks like it is parallel until you start to follow it back to its origin. As you follow it back to its origin, you see that it must come from a same point.
Q. What does that mean?
A. Meaning that it can't be a tandem. If it was a tandem, then it would remain parallel. So that rules out the tandem axle. So now that only leaves you with two options: It must come from the passenger side, and it has to be a single tire. So, therefore, it can only be the right front tire, and the right rear -- the first tire mark has to be made by the right rear tag axle.
Q. And did you make a determination as to what caused that tire mark?
A. Yes, it's a combination of the right front tire being locked up at the same time Ms. Morado is also steering her vehicle to the right.
Q. Where on Exhibit 17 does the right front tire mark begin?
0114
A. It's a green line that -- let me just --
Q. Sure.
A. -- show you. It's a green line that begins and it says Skid Mark Number 2 at Station 500.
Q. I see there.
A. Here you go.
Q. And how far down the road is the beginning of the -- what you have identified as the right front tire mark from the first tire mark? They look -- well, I don't want -- you tell me.
A. If you hand me my calculations, I can tell you because that was an interval that -- I think I see them right there. There you go. Any of -- any of those will work. That will work right there.
Approximately 50, 51 feet. No, that can't be right. That's the center of --
Q. That can't be right.
A. That's the center of mass. I'm sorry. That's the center of mass. That's not the distance.
THE WITNESS: If we have a ruler, Melissa, I can tell you what that distance is between those two tire marks.

MS. DORMAN: That's a good question. Let me see what I can find.
Q. (BY MR. HAYNES) I mean, just eyeballing it,

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it looks like it's 80 feet --
A. 80 feet.
Q. -- or so.
A. Uh-huh.
MS. DORMAN: Would this work? It's only the inches.
THE WITNESS: It will.
MS. DORMAN: Okay.
THE WITNESS: I mean, I can --
MS. DORMAN: Sorry.
MR. TIJERINA: Will the bottom pull off, Melissa?
THE WITNESS: It will probably make a bunch of --
MS. DORMAN: I don't know.
THE WITNESS: -- little divots there. This will work. Hang on a second.
MS. DORMAN: Do you want me to --
THE WITNESS: Yeah, let me just lean over it.
MS. DORMAN: -- get out of your way?
THE WITNESS: Yeah, this -- this will work.
A. So if you put that on zero, that would help me out.

0116

Q. (BY MR. HAYNES) Okay.
A. So we're looking just, if I'm looking at this right, probably around 88 feet. It looks like it's a little shy of 9 inches.
Q. Okay.
MR. HAYNES: Here you go, Melissa.
MS. DORMAN: Sure. Sorry we didn't have a ruler. Keep it handy.
Q. (BY MR. HAYNES) Is there any significance to you between the location for the first tire mark from the right side tag axle tire and the beginning of the second tire mark that you say is from the right front tire?
A. Yes, there's a couple of things that one can tell, learn from those marks. It's clear that the trajectory of the bus is moving leftward in the lane of travel. So that tells you that she must be preceding that first sign of physical evidence with some kind of steer inputs prior to the first sign of physical evidence. The only way to get there is you've got to have the -- the vehicle plotted out on a -- on a path. You can see that now as it starts to take shape on the drawing, that she is moving to the left. So, therefore, you know there's some pre-steer

maneuvers that are taking place prior to the first
0117
sign of physical evidence.
The other thing that you can get from looking at the tire marks themselves is that it's clear that she is steering the vehicle to the right and braking the vehicle at the same time. That's what's setting up the motion that's going to follow where the vehicle goes from the left side of the lane all the way over onto the shoulder. It's the absence of the tire mark being made by the left front that allows her to steer this vehicle.
Q. Say that last part again.
A. It's the absence of the right front tire mark that allows her vehicle to be turned and steered to the right. And said another way, if there were two tire marks and she was creating two locked wheel tire marks with both the right front and the left front, she would have just gone straight. It's the fact that she's got one locked and the other able to turn and steer is what guides her towards the right.
Q. Does this photograph also show the third tire mark, Exhibit 22?
A. That will be the third one coming into view, yes, sir.
Q. What -- what tire is making the third tire mark?
0118
A. That will be the tandem. It's going to be the inboard tandem.
Q. The inboard tandem on the left?
A. Yes, sir.
Q. And just to describe what's in Exhibit 22 for somebody looking at this after -- later, that's -- that's just the tire mark there towards the middle of the lane as we look at the picture to the right of the -- the other two tire marks or how do you want to describe that?
A. Yeah, I wouldn't -- wouldn't put it towards the middle of the lane. I'd put it more towards the left side of the lane. Yes, you accurately described it after that.
Q. Do you have an opinion on what's causing those tire marks?
A. Yes, that's a locked wheel skid mark, and Ms. Morado is applying the brakes hard enough to lock those tires up or lock that tire up and the other ones on the right side.
Q. In your experience, does that look like a standard locked wheel skid mark with two distinct --
(Telephone ringing.)
Q. (BY MR. HAYNES) Hold on.
MS. DORMAN: Sorry.
0119

MR. HAYNES: That will do it.
Q. (BY MR. HAYNES) Does the inboard tandem tire mark in Exhibit 22, does that look like a standard locked wheel tire mark to you?
A. Yes, sir.
Q. What is it about that mark that looks standard to you for a locked wheel tire mark?
A. From the fact that you can see that it's leaving a large black mark on the pavement, that's not typical.
Q. That's all you look for is a black mark on the pavement?
A. Well, certainly in this particular case. Then ultimately you're going to see some longitudinal striations in the mark.
Q. Are any longitudinal striations visible in Exhibit 22?
A. Not initially, no, sir.
Q. What about the right front tire, the mark in Exhibit 22 on the -- the furthest left tire mark on Exhibit 22 which you said was made by the right front tire being locked up, do you see any longitudinal striations in that mark?
A. Yes, sir.
Q. Can you point out to me where you see them?

0120

A. Sure. I think here's an example of that. I'll give you another photo where you can see the striations appearing. This is down near the -- about the -- the middle -- the middle of the right front tire mark. Here it is. It's the one that's furthest down towards the right. You can see that there are some striations that are present in that tire mark. We'll mark this photo as Exhibit 23.
(Exhibit Number 23 was marked.)
Q. (BY MR. HAYNES) Can you identify on Exhibit 17 where this tire mark is on this photo in Exhibit 23?
A. Let me see. Let me take a look and see if I can do that.
Q. You know what, before you do that, I didn't get you to identify on Exhibit 17 where the inboard tandem tire mark is that's -- you identified in Exhibit 22. Can we do that first?
A. Sure. That would be at the start of the orange line which is at the third vehicle shape, yes, sir.
Q. Where it says "Skid Mark Number 3"?
A. Yes, sir.
Q. Okay. All right. Now can you identify what we were looking at in Exhibit 23 that you identified

0121

as a continuation of that right front tire mark? I'm just trying to get an idea of where we are because

what we were looking at first, I guess, was on what's labeled Skid Mark 2 at 500 feet on Exhibit 17, correct?
A. Correct.
Q. So what are we looking at in Exhibit 23?
A. On Exhibit 23 we're looking at the -- the right front tire mark that's in the vicinity just opposite Stripe Number 14. Just to give you your bearings here, this is Stripe 14 here in the photographs. That's Stripe Number 14 at the tip of my finger.
Q. So we're talking another 80 feet or so down the road?
A. Approximately.
Q. And is this the only photo -- first of all, let me -- let me ask you again, because I don't remember for sure what you said. In Exhibit 22 on the right front tire mark, did you say that you do or do not yet see the longitudinal striations?
A. In this one?
Q. Yes, sir.
A. Yes, you do. On the right front?
Q. Yes, sir.

0122

A. Yeah, I just want to make sure we're clear. Yes.
Q. For the less nautically inclined, longitudinal and latitudinal mean which way and which way?
A. Longitudinal, when we're talking about these kinds of abrasions or these kinds of striations, we're talking about lines that are going parallel to the mark, going right down the lane to the mark.
Q. So we're not talking about the fact that there is -- or correct me if I'm wrong, we're not talking about the fact that there is two parallel marks; we're talking about lines within the mark?
A. Yes, sir. Yes, sir.
Q. Which?
A. We're talking about lines within the mark.
Q. Okay. Not the fact --
A. Longitudinal lines within the mark.
Q. Right. So, for example, on Exhibit 22, there's for both the right front tire mark and the inboard tandem mark, there's two parallel lines, right? Correct?
A. Correct.
Q. You're not saying that those parallel lines or parallel marks are the longitudinal striations.

0123

You're saying that there is striations within those two parallel marks?
A. I'm saying those parallel lines that are within the mark are the longitudinal striations.

Q. Yeah, I don't -- I don't think we're --
A. Here's a --
Q. -- communicating.
A. Here's a photo. Let me show you. This is a good photo here. Maybe this will be a little clearer. Do you see this tire mark here in the picture and do you see lines going down within the mark, longitudinal lines appearing in the mark itself?
Q. Hold on just a second. Let me mark that. Mark this as Exhibit 24.
(Exhibit Number 24 was marked.)
A. You -- if you -- if you see those, then we're off to a good start.
Q. (BY MR. HAYNES) Well, I'll tell you what I see and then you tell me if it's what we're talking about.
A. Okay.
Q. I see two lines running, you know, this way parallel to one another.
A. Okay. Those are the two tire marks.

0124

Q. And --
A. Now, within the mark --
Q. Okay, but wait. Then between those two parallel lines, there's -- appears to be roadway.
A. Okay. All right. Now --
Q. Now, with respect to those two parallel tire marks, are you saying in each of those parallel tire marks there's something else?
A. Yes. Here, let me show you.
Q. Okay.
A. Okay. Here's -- here's -- this is really getting clear here. Let's look at this. Look at this photo right here. I'm just -- right where -- just where I'm pointing, this tire mark right here.
Q. Okay.
A. In that tire mark -- and the tire mark has boundaries. There's boundaries.
Q. Is this the right rear tag axle tire?
A. Yes, sir.
Q. Okay.
A. In this tire mark right here, right at the tip of my finger, you should see lines that are running parallel to the mark. In this picture, you can, at least, pick up one, two, three lines, at least three lines, at least, in that mark.

0125

Q. May I see it? Which is the mark that's alleged to have some waviness in it?
A. Sure, I'll get you that.
Q. Okay.
A. Here's a photo. The marks that -- that people have been talking about when they were talking

about these wavy marks are the marks that are being made by the tandem on the driver's side. Here's a good picture that illustrates that. I think here you can see the two dark tire marks running parallel to each other.

Q. Let me mark this as Exhibit --

A. Sure.

Q. -- 25.

A. Right.

(Exhibit Number 25 was marked.)

A. First off, do you see the two black tire marks that are running parallel to each other?

Q. (BY MR. HAYNES) Sure.

A. Okay, good. Now, if you look at those tire marks, do you see how the tire marks themselves are making a kind of an "S" pattern going side to side? Do you see that?

Q. Yeah, that's very visible.

A. Okay, great. Now, do you also see in those

0126

tire marks that not only are they going side to side, but they're going side to side at the same time? In other words, they're running in sequence with each other side by side. When one goes to the right, the other goes to the right. When one goes to the left, the other goes to the left.

Q. Right.

A. Do you see that?

Q. Yes.

A. Okay. That tells you that you've got to have two tires that are simultaneously seeing the same force at the same moment. There's only two tires that can possibly do that. That has to be the tandem on the driver's side.

Okay. I'm going to take you one step further. If you look at those marks and you see how those marks are going side to side, if you look closely in those two marks, you should see some lines, some striation lines that all go to the left, go to the right in each individual tire mark.

Q. What does that mean to you?

A. Those are locked wheel striations.

Q. Why are they wavy like that?

A. They're wavy like that because it's a tandem axle, and it's a tandem axle with the driveshaft still

0127

connected to the differential which is attached to the tandem axle. So the reason it's making the wavy marks is that those tires are locked and at the same time the driveshaft is rotating and creating this oscillation effect on the tire marks.

Q. Before this accident, had -- had you ever seen that?

A. No, I've never seen marks like that. They're

highly unusual.
Q. Have -- have you ever -- have you done any testing or reviewed anyone else's testing to show that that's the kind of mark that would be created by the driveshaft being only connected at the differential end?
A. I did a literature search on driveshaft failures to see what was available in the public domain, and there is nothing out there.
Q. Okay. We kind of got off track here. I think the last one we specifically numbered was the inboard tandem which was shown in Exhibit 22, correct?
A. Yes, sir.
Q. Then what's the fourth tire mark? Let me give you these, back to you.
MR. HAYNES: We need to start rolling up here on the left.

0128

MS. DORMAN: Okay. Do you want to leave the first bus out or --
MR. HAYNES: No, we can --
MS. DORMAN: Okay.
MR. HAYNES: I just want to start catching up to where we are now.
MS. DORMAN: Okay.
THE VIDEOGRAPHER: I've got about four minutes left on tape.
MR. HAYNES: Okay. I guess change it while he's looking.
THE VIDEOGRAPHER: Off the record at 2:14 p.m., ending Tape 3.
(Recess taken, 2:14 p.m. to 2:24 p.m.)
THE VIDEOGRAPHER: On the record at 2:24 p.m., beginning Tape 4.
Q. (BY MR. HAYNES) Mr. Rucoba, earlier I was asking you, we were discussing the -- the Bosch testing and Mr. Granat's testing. I want to -- I was trying to ask you about how you would scientifically go about evaluating the handling of the bus if the tag axle tires were turned. I think what I understood you to say was that you would simply lock or unlock the tag axle and drive the bus --
A. Sure.

0129

Q. -- or the motor coach?
A. Yes.
Q. Is that right?
A. If -- yes. If your evaluation is going to be evaluating the bus under normal roadway conditions, yes, that's what I would do.
Q. I think you know this, that Americanos' theory in the case is that the -- the driveshaft came loose on the transmission end, that the tag axle became unlocked; the tire rod was bent and forced the

tag axle into the tag tire and turned it.
Now, whether you agree that's what happened or not, how would you test scientifically the handling of the motor coach? How would you evaluate that with the tag tires turned, assuming that's what happened?
A. Well, I think first off you've got to go back and evaluate what the bus does under normal conditions with and without the tag axle unlocked. I think you need a baseline, and you need to evaluate that in the fashion that Mr. Granat tested the vehicle because only then do you get an understanding of just what this bus does outside of any kind of external influences such as adding rams to the bus and deflecting it.

0130

Q. That would then give you your baseline?
A. That would give you your baseline. That would certainly tell you what this thing can do, what this axle can do under normal or even excessive handling maneuvers and at least give you a baseline for that. Now --
Q. How would you take the next step, though, and test the handling or evaluate the handling of the bus when the -- assuming that the tag tires were turned?
A. Well, I think you've got to go back and then look at the physical evidence that's on the tag axle and make sure that you've got a theory that agrees with the physical evidence. That would be the next step. Then I think you've got to take it to a level at least that puts in reasonable amounts of steer that are going to evaluate what this axle does relative to your baseline.
I don't think that when you break off of a steering stop or a wheel stop and you attach a chain to the axle and artificially start introducing angles and design changes to the bus that are of the extreme level that the Americanos testing followed, now you're getting outside of the realm of anything scientific or out of the realm of anything that has to do with this kind of a crash and the handling capability of this

0131

bus under those conditions.
MR. HAYNES: Objection, nonresponsive.
Q. (BY MR. HAYNES) I'm not really asking for the criticism you have of the Americanos test at this point. What I'm asking is if you were given the task of evaluating the handling of the bus with the tag tires turned, how would you go about scientifically testing that?
A. I can't answer the question any other way than I've just answered it.
Q. You haven't told me anything about how you would do anything other than the baseline testing.

A. Well, I think that's where you start, but I don't think that you --
Q. I understand that's where you start. I'm asking you --
MS. DORMAN: Please let him finish.
A. But again, I think that getting to that level, I think, gives you a baseline for understanding just what levels you can take this to.
Q. (BY MR. HAYNES) Okay. Do you --
A. Now --
Q. Go ahead.
A. Now, when you take it to the level that the Americanos testing did, I think you're getting outside

0132

of the realm of science.
Q. What I'm asking you is whether you have -- you would have any recommendations for any testing to evaluate the handling of the bus with the tag tires turned beyond the baseline testing you've described.
A. No. I think if you're going to test it under real world conditions, I think that's the way you would test it, in the baseline condition.
Q. Okay. We are going to go back to where we were when we took a break about you were going to identify Tire Mark Number 4.
A. Right. That's, I think, a photo that -- we'll start with that and --
Q. Okay. We'll mark this as Exhibit 26.
(Exhibit Number 26 was marked.)
Q. (BY MR. HAYNES) And which is Tire Mark 4 --
A. Tire --
Q. -- in Exhibit 26?
A. Tire Mark Number 4 is the tire mark that is coming into view in the upper portion of the photo right about near the tip of my finger. It's the tire mark that is closest to the center line of the roadway.
Q. What tire mark is making that mark?
A. That's going to be the outer tandem.

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Q. It's the outer tandem wheel on the left?
A. Yes, sir.
Q. And Skid Mark 4 in your Exhibit 17 is right next to the line with the Number 14 above it?
A. Yes, sir.
MR. HAYNES: Thank you.
Q. (BY MR. HAYNES) Is this the tire mark you're talking about or is this -- or something else?
A. That's a -- a roughness in the road. The tire mark you can see. Let me show you where the tire mark begins.
Q. Up here?
A. Yes, sir.
Q. Okay.

A. Yes, sir.
Q. Just testing you. Do you have an opinion about what is causing the outer tandem wheel tire mark in Exhibit 26?
A. That's a locked wheel.
Q. Do you have an opinion about why the inboard tandem wheel allegedly locked before the outer tandem wheel?
A. No.
Q. Is there any significance to that one way or another in your opinion?

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A. It's unusual because I would expect them to both lock together. I'm not sure why one is locking and the other isn't.
Q. You don't have any theories about that?
A. No, sir.
Q. Is there a closer up picture than Exhibit 26 showing that tire mark, fourth tire mark that's made by the outer tandem wheel?
A. No, nothing any closer.
Q. Based on photograph Exhibit Number 26, what are you looking at to allow you to say that's a locked tire mark?
A. Again, it's the presence of the mark itself. When you actually get a little closer to it and you're on top of it, you can see that it's leaving those striations on the roadway surface, longitudinal striations.
Q. When you say get a little closer to it, what do you mean?
A. Meaning as you get, like, for instance, here when you're actually on top of the mark.
Q. Okay. That's what I meant, if you had a picture that was closer.
A. I'm sorry. I misunderstood what you were talking about.

0135

(Exhibit Number 27 was marked.)
Q. (BY MR. HAYNES) Okay. So I'm marking as Exhibit 27 the photograph that shows the outer tandem wheel mark, tire mark, that is Skid Mark 4 on Exhibit 17.
A. Yes, sir.
Q. And Exhibit 27 shows -- begins to show those wavy marks that we were talking about earlier, right?
A. Yes, you actually do see it in both of those two tire marks.
Q. The inboard and outboard tandem wheels?
A. Yes, sir.
Q. And you said you think that's caused by the driveshaft that's come loose from the transmission end?
A. Yes, with both tires locked.

Q. The vibration?
A. Right.
Q. Caused by the driveshaft?
A. Right. It's a combination of the driveshaft vibrating the axle, but the left side tandems are locked.
Q. I think you told me earlier that the driveshaft was already loose from the -- from the transmission end in reasonable probability even before

0136

the first tire mark was made?
A. Correct.
Q. Correct?
A. Correct.
Q. So why, if that's true, is the waviness in these tire marks just showing up a few hundred feet further down the road?
A. Because the tires have to be locked.
Q. The tandem tires have to be locked?
A. Yes, sir, on the left side only.
Q. What about Exhibit 26, Skid Mark 3 is the inboard tandem you said was locked, but there doesn't appear to be any waviness in the photos before we get to Exhibit 27 with the fourth skid mark, correct, at least the way you're defining waviness?
A. I wouldn't agree with that.
Q. Do you have a photo of Skid Mark 3 that you say is the locked inboard tandem wheel that shows waviness before we get to Skid Mark 4?
A. You never really get a close-up view of it. The best I have, which I think still shows that you have some waviness to it, would be, for instance, that photo where you're looking back at the tire marks.
Q. I'm going to mark this as Exhibit 28.
(Exhibit Number 28 was marked.)

0137

A. And this --
Q. (BY MR. HAYNES) Let me ask you a question about this one first, and then you can show me the next one.
Exhibit 28 appears to be looking the opposite direction back up the road from Exhibit 27. Would that be fair?
A. Yes, sir.
Q. And my question is before the outer tandem wheel is allegedly locked, looking back up the road at the allegedly locked inboard tandem wheel, do you see any waviness?
A. Yes, and I say that if you look at that photo that you can see that at -- at the point near its initiation on the left rear inboard tandem, there is some waviness to that tire mark, yes, sir.
Q. Are you talking about back here?
A. Yes, sir.

Q. Before the outer tandem wheel mark starts?
A. Yes, sir.
Q. Is there any photo showing that tire mark any closer than what's shown in Exhibit 28?
A. I think you can see it in this one as well. This is looking in the opposite direction.
Q. I'm going to mark this as Exhibit 29.

0138

(Exhibit Number 29 was marked.)
Q. (BY MR. HAYNES) Exhibit 29 shows the beginning of the inboard tandem tire mark?
A. Right. Right.
Q. And can you identify for us on this Photo Exhibit 29 what you're describing as waviness before we get to the start of the outer tandem wheel tire mark?
A. The same -- the way we've been describing it. What you can see is that the mark itself has an appearance especially up -- as you look at it from an oblique view, the way this picture is taken, it has an appearance of being in a sort of side-to-side fashion. It's --
(Phone ringing.)
MS. DORMAN: Oh, my goodness. Sorry, y'all.
Q. (BY MR. HAYNES) What's an oblique view?
A. Meaning that it's easier to see it from a low level faraway view because it enhances the look of that tire mark. Just like when we were looking at it beforehand, when you start to look at it from a lower -- low level oblique view, you start to see those noticeable -- the noticeable waviness in those tire marks.

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Q. You're saying that you can see that on Exhibit 29?
A. Yes, and the one before that, Exhibit 28, as well.
Q. Can you show me the photo, it may be one of these, that shows Skid Mark Number 5?
A. Yes.
Q. I guess we'll probably start getting to where they are going to be maybe all shown in the same photos or a couple of photos. I'm going to be asking you to identify Skid Mark 5, 6, I guess 5, 6 to start with. That's when she is going onto the shoulder, correct?
A. That is correct. Here is a view of Skid Mark Number 5. Let me just get something. Let me see what else I've got here, a better one. Let me see. This is Skid Mark Number 5 here at the bottom of this photo. It's coming in right here.
Q. I'm going to mark that as Exhibit 30.
(Exhibit Number 30 was marked.)

Q. (BY MR. HAYNES) And in Exhibit 30, Skid Mark Number 5 is the tire mark on the shoulder, furthest right tire mark on the shoulder?
A. Right. Correct. Correct.
Q. What tire is that?

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A. That is being made by the right front tire.
Q. What is causing that?
A. It's being steered. It's being steered. The vehicle is being steered. It's a tire mark being created by the vehicle being steered to the left.
Q. So is the tire mark -- are you saying the tire mark is created by the fact that there is a sharp turn being made to the left?
A. Yes, sir.
Q. That corresponds on Exhibit 17 to where it says "Skid Mark 5"?
A. Correct.
Q. Which is -- what about Skid Mark 6, where is -- where -- what photo -- does this photo show that one as well, Exhibit 30, or is there a better one?
A. Let me see. Yes, this is Skid Mark 6 right there at the tip of my finger right there.
Q. What tire is creating that mark?
A. Skid Mark 6 is actually -- there is three different tires, and it's hard to tell -- excuse me -- two different tires that are making that. It could be either the outer tandem or the tag axle. They're one on top of the other at that point in time as the vehicle is starting to rotate counterclockwise.
Q. Are you saying it's either/or or you think

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it's both?
A. Hang on. Let me look here a second. Can I bring this a little closer? I'm starting to lose it with the --
Q. Sure. You can come around here if it helps.
A. Skid Mark 6 -- excuse me. Skid Mark 6 is the inner tandem on the right side.
Q. Okay. That's all, just the inner tandem?
A. Yes, sir.
Q. So not the outer tandem and the --
A. Correct.
Q. -- tag axle?
A. Correct. And I can see it a little closer. It is the inner tandem.
Q. And is it being caused by the vehicle being rotated counterclockwise?
A. Yes, sir.
Q. Skid mark -- why on Exhibit 17 is Skid Mark 8 before Skid Mark 7?
A. Just the way they were labeled.
Q. Okay. Can you show me 7 and 8, well, 7, 8 and 9 maybe? They look like they're all together.

A. Yes. Skid Mark 8 is the left front. That would be right here. Skid Mark Number 8 is the left front.

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Q. What's causing that?
A. That's, again, the vehicle was turning, being turned.
Q. Counterclockwise?
A. Yes, sir.
Q. Okay. Then 7?
A. What color is 7?
Q. You got me on that one.
A. That's light blue is right here. It ends up going parallel. It's actually -- Skid Mark 7 is coming in here and is running parallel to the -- to the fog line. So you can see it runs parallel to the fog line here. I think it's maybe hard to see, but this is the fog line up here. Eventually Skid Mark 7 is running adjacent to it. Then it starts to curve away from the fog line.
Q. What --
A. That's --
Q. What tire did you say that?
A. That's actually a combination of two different tires, one mark on top of the other that can be making that. The inboard tandem and the tag axle on the left side. So inboard left tandem, tag axle left side.
Q. Is that also being caused by the vehicle --

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A. Yes.
Q. -- turning to the left and rotating counterclockwise?
A. Yes.
Q. Okay. Skid Mark 9?
A. Skid Mark 9 is the one that is down here, and that is going to be one that ultimately separates out into two marks. That's Skid Mark 9 right here and then branches out into two separate marks.
Q. What tires are making those two marks?
A. Those are being made by the outside tandem on the right side and the tag axle on the right side.
Q. I'm sorry. The outside tandem on the right side, and what else?
A. Or -- and the tag axle on the right side.
Q. Skid Mark 10?
A. Skid Mark 10 is here. That ultimately is going to be created by the inboard tandem on the left side. That's going to be this mark right here. It's going to be this curvy mark right here coming back.
Q. That's also -- these are also --
A. Identified.
Q. -- reflected on here --
A. Yes.

Q. -- identified on Exhibit 17 in the --
0144
A. Right.
Q. -- photos below?
A. Exactly. So if you walk a little bit closer, this photo here is helpful because if you walk a little bit closer, you see you've got those two marks right there at the tip of my finger. That would be these two marks right here. You've got a mark that's going across the road like this. That would be this Skid Mark Number 5.
Q. What -- what about Skid Mark 11?
A. Where is Skid Mark 11? Skid Mark 11 is going to be created by the outboard tandem on the left side. Skid Mark 11 is here at the tip of my finger and right there on that photo.
Q. That's basically 5 through 11 are all caused by the vehicle turning to the left --
A. Yes.
Q. -- and rotating counterclockwise?
A. Yes, sir.
Q. If we back up to the very first tire mark that we saw, I wanted to ask you, how does having only one allegedly locked tire affect steering, if it does?
A. There's a pull to the right. Actually the first two tire marks mean that they're on the right side, would pull the vehicle to the right.
0145
Q. What is that based on?
A. It's based on the fact that you've got friction to the point of tires locking up or pulling the vehicle to the right. I've done -- I've done a number of tests in the past on passenger vehicles where we've intentionally locked up tires on one side or the other to monitor that. It's just a standard fact that you will have additional friction or added forces applied to one side, will cause the vehicle to be pulled to that side.
Q. Does the -- does it shift the weight at all?
A. Not -- not lateral shifting, no. There is no shifting in that fashion. There may be some slight -- slight amount of shifting front to rear.
Q. What do you mean?
A. Meaning that if -- well, you know, like when you apply the brakes in your car, you feel -- you feel yourself going forward.
Q. Right.
A. There's a weight transfer from rear to front.
Q. Right.
A. So you -- in this particular case, you would feel some of that because you're applying the brakes and you are decelerating the vehicle, although you're only decelerating it on one side. So you may feel
0146

some weight shift from rear to front, but you're not going to feel weight shift from left to right or right to left.
Q. Have you in your calculations determined the overall deceleration rate of the bus from the first tire mark to just before the vehicle started the counterclockwise rotation?
A. Yes, we broke that out into the various sections earlier. That's how I arrived at my numbers by applying various drag factors for each phase of the crash.
Q. Is it -- is it your opinion that from the -- where we see the first tire mark until the vehicle starts the counterclockwise rotation that Ms. Morado was applying heavy braking or hard braking?
A. Certainly in the right-hand turn where we can see the locked wheel skid marks she's applying the brakes to lock up those various wheels. Now what has to happen --
Q. That's starting with what skid mark?
A. The very first one, whichever tire we're talking about.
Q. That's what I was asking.
A. The tag axle which is on the -- on the right side, that first mark.

0147

Q. So from the first mark until the beginning of the counterclockwise rotation, it's your opinion that she was braking hard?
A. Yes. Yes, that's true. In addition, she's also steering her vehicle to the right based on appearance -- the appearance of the tire marks themselves. But I want to make sure we're clear on this. When you look at the tire marks, there is a point in time where she lets off the brake, at least enough on the front to where she's no longer locking up the front. That's what allows her to steer the vehicle sharply back to the left.
Q. Where is that point?
A. You can see that the right front tire mark stops right here at this vehicle. I'm not sure what vehicle number that is, but at this vehicle number there is a green line. The green line ends right here. Then ultimately it picks back up again. So at some point in time --
Q. As she was entering the right shoulder?
A. Yes. Correct. That's when the tire mark stops.
Q. So what you're saying is from the point of the first tire mark until where the motor coach begins to enter the right shoulder, she was, in your opinion,

0148

braking hard and steering the vehicle to the right. Then when the -- the motor coach entered the right

shoulder, she let off the brake?
A. Yes. Right. And the tire mark stops. I mean, there are some -- there are sort of finite bits of time that have to take place where she takes her foot off the brake to the point where she is able to stop creating a locked wheel tire mark with the right front. But she needs that turning capability in order to turn this vehicle as sharply and as violently as she turns it to put it into the broadside skid. She needs all of the turning capability. Where we see that happening is that when she's stops locking up the front tire, now she has complete turning capability with both the left and the right front. That's why she's able to put in the amount of steer that she puts in and cause the vehicle to go into a broadside slide.
Q. How much steering input are we talking about?
A. I can't really give you a magnitude, but I can tell you that it was hard enough and fast enough to put the vehicle into a slide.
Q. You can't tell me in tons of degrees how much you turn the wheel?
A. No, I can't. I think actually that might be a better question for Mr. Granat because Mr. Granat

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went out and put this vehicle through some pretty aggressive driving maneuvers, and he could probably tell you what a bottom end steer input would be required to -- to -- what -- what the maximum steering input was that he put in during his test maneuvers. Then we would at least have a bottom end idea of what she must exceed in order to create the pattern of tire marks and the motion of the vehicle that she created.
Q. It sounds like it would have to be a pretty significant steer to the left?
A. I would agree with that.
Q. That --
A. In that -- in that I can tell you it's not something that I would expect would be -- what would be required just to straighten the vehicle out and follow the path of the roadway along the shoulder. I think it has to be an amount that's excessive because of the fact that you turn this vehicle in basically several hundred feet. It's now turned from going straight down the road to where it's almost 90 degrees to the roadway as it slides off in the median while only traveling across the roadway two lane widths laterally.
Q. From the point of the first tire mark to the point where the vehicle starts to go off on the right

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shoulder, in your opinion, did Ms. Morado to that point basically have control of the motor coach?
A. What point are we talking about?
Q. From the first tire mark until where the

motor coach starts to go off on the right shoulder.
A. Yes. She has control of her vehicle. She has relinquished some steering control, though, because of the fact that she has locked her front tire up. You -- by virtue of that fact, you have given up some of your steering control because you have locked up or she has locked up the right front tire. She still has control of her vehicle. She's still able to steer it. We can see that because she's able to negotiate a path which takes her off on the right shoulder. However, she has given up some of that steering control by the virtue of the fact that she has locked up her right front tire.
Q. Are you critical of her response to this emergency situation before she goes off onto the right shoulder?
A. Well, again, I think I said before, I wasn't brought in here to be a critic, but I can tell you that there are other choices available to her. She has a roadway that's in front of her. She doesn't have any obstacles off on either side of the road.

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Had she guided her vehicle off to the right onto the shoulder just like she was doing, all she needed to do was to continually apply some amount of braking while she was on the shoulder and park her vehicle on the shoulder. She could have just taken her foot off the brake completely but steered her vehicle to a point where she just stays parallel to the roadway. We know that she gets to a point where she was parallel to the roadway because she goes into a clockwise and then follows that up with a counterclockwise maneuver.
There are choices that were available to her, and, yes, there is a roadway. There is an ample amount on either side that would have allowed her to negotiate and navigate her way out of this situation.
Q. If I'm hearing you right, when she got to the right shoulder, you're not saying she should not have turned the wheel to the left somewhat to straighten out the vehicle. You're -- you're saying that the vehicle steering should not have been as aggressive as you believe happened?
A. Right. Like I said in my report, she overcorrected. She overcorrected steering to the left such that she put her vehicle into a slide.
Q. As she got to the right shoulder, you believe she took her foot off the brake and turned the wheel

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to the left. You're just saying she turned it too far to the left, way too far to the left?
A. Sure. I'm saying that that wasn't necessary, that there were other choices of which would involve steering but not steering of this magnitude to the level she overcorrected it at.

Q. So when she got to the right shoulder, took her foot off the brake, if she would have steered to the left only enough to straighten out the bus on the shoulder, you would have had no problem with that?
A. Sure. I think that there -- she certainly has that available to her.
Q. The reason you think that she did not do that is because the vehicle went into this counterclockwise rotation?
A. Correct.
Q. And you don't believe that the vehicle went into this counterclockwise rotation because of the unlocked tag axle turning the tag tires and amplifying any steering to the left?
A. Correct.
Q. Just assume with me for argument that Americanos' theory is correct and that when she went to the right shoulder and let off on the brake that she didn't turn her wheel as aggressively to the left

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as y'all think she did. That what sent the vehicle into the counterclockwise rotation was the unlocked tag axle turning the tag tires.
A. Uh-huh.
Q. If Americanos' theory is correct, would you still be saying that Ms. Morado caused the accident?
MS. DORMAN: Object to form.
A. Well --
Q. (BY MR. HAYNES) Ms. -- Ms. Morado's driving or improper driving caused the accident?
MS. DORMAN: Object to form.
A. Sure. I think that there's still other choices that are available to her. I mean, she could just apply the brakes and not put any steering in whatsoever and just let her vehicle go off onto the shoulder. She doesn't have to do any steering whatsoever.
Let's go back to the theory of Americanos. And first off, I think you'd have to support that theory with science. Right now there isn't any that's out there that I've seen. So if we're talking in terms of a hypothetical, it's -- it's an unsupported hypothetical right now. I don't know of any science that's been provided that supports it. But I'm just trying to answer your question that there

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are still other options available to her.
Q. (BY MR. HAYNES) And it's a hypothetical. Okay. I'm not trying to say that it's not.
A. I appreciate that.
Q. I'm asking you a hypothetical question, and I'm saying that if you assume for the purpose of argument that Americanos' theory is correct about what caused this counterclockwise rotation, you would not

still be criticizing Ms. Morado as having caused this accident, right?
MS. DORMAN: Object to form.
A. I think you'd have to evaluate that hypothetical with more science. I can't answer that hypothetical without having more scientific data.
Q. (BY MR. HAYNES) I'm not asking you to agree with it because I know you're never going to do that. I'm just asking you that if it's right, then she didn't cause this accident, her driving didn't cause this accident?
MR. HILL: Object to form.
A. Again, I don't know any other way I can answer your question. I would need more data to be able to answer that.
Q. (BY MR. HAYNES) And what I hear you saying is you don't want to answer that hypothetical without

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the data backing it up?
A. Sure. I think that would be a good thing for an expert.
Q. Okay. So unless you see evidence that the broken driveshaft caused the tag axle to unlock and turn those tag tires and -- and make the vehicle go into this counterclockwise rotation, then you believe the sole cause of the accident was driver error?
A. Again, if we're going to talk about in terms of a hypothetical, let's support it with some science. Right now there hasn't been any, but I can tell you that even if there is that out there, there is an option that's available to her that has nothing to do with steering. She has the ability to steer this vehicle off the right side of the road just like we've talked about, and if this vehicle is traveling straight, once she turns it straight, all she has to do is just apply the brakes and keep the steering wheel straight; she has enough room to be able to get herself out of trouble.
Q. So you're saying that even if Americanos' theory in the end proves to be scientifically correct and accurate, then Ms. Morado's driver error still caused the accident?
A. Because there are other options available to

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her. Had she chose them, she would have been able to get herself out of trouble.
Q. So when she drove over onto the right shoulder and let -- let her foot off the brake, you're saying just the fact of turning the wheel to the left to straighten out the motor coach on the shoulder was enough driver error to cause this accident?
MS. DORMAN: Object to form.
A. No. If we're -- we're talking back into -- into the realm of this particular crash, no, that's

not what she does. What she does is she aggressively steers this vehicle to the left, hard enough to put this vehicle into a slide.
Q. (BY MR. HAYNES) Right.
A. But the --
Q. And I'm asking you to assume she didn't do that, that she didn't turn the wheel aggressively enough to the left to put the vehicle into a slide. I'm asking you to assume that in some distant future Americanos scientifically proves that the counterclockwise rotation to the left was not caused by driver input.
MS. DORMAN: Object to form.
Q. (BY MR. HAYNES) Are you -- are you with me?
A. I believe I am.

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Q. Okay.
A. Yes, sir.
Q. Under those conditions where that was scientifically proven, then you would not blame this accident on driver error. Would that be fair?
A. I'd like to see the data in order to answer that question.
Q. Without seeing the data, you can't answer the question?
A. No, sir.
Q. Just out of curiosity, if you were driving a motor coach down the highway at 69 -- 67 to 69 miles an hour and you wanted to bring it to a stop as quickly as possible, how long and how far would it take you?
MS. DORMAN: Object to form.
A. I guess it depends on -- on what kind of deceleration you're going to be applying. Are you talking about panic braking? Are you talking about just normal deceleration, gradual type braking? I'm not --
Q. (BY MR. HAYNES) Both. Give me both alternatives.
A. Well, let me -- let me write it out and I can tell you.

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Q. You've got to do something like that or it's not a real accident reconstruction deposition if nobody asked you to do that.
A. Okay. What was -- what was our -- I'm sorry. What was your initial velocity?
Q. Let's say 69 miles per hour. We're going to do normal braking to a stop and hard braking to a stop.
MS. DORMAN: With this coach?
Q. (BY MR. HAYNES) With this motor coach. Are you ready?
A. I was going to wait for Melissa.

Q. Okay.
A. Okay. For what I would consider normal deceleration rate from 69 miles per hour, it would take you approximately 794 feet to decelerate from 69 miles per hour under what I would consider to be more panic braking. You're going to be stopping at approximately 345 feet.
Q. So what -- what do you classify or how do you characterize panic braking?
A. I used the middle of my range for dry deceleration rates in my calculations. I used 0.46 g's.
Q. Well, to a layperson, how would you describe

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panic braking?
A. To the point where you're going to be locking up wheels.
Q. In that case you could bring the motor coach to a stop in about 345 feet from 69 miles per hour?
A. Approximately.
Q. Right. On the diagram here as the motor coach is kind of below the line with Number 17 as the motor coach is going onto the shoulder, it's look -- it looks like if it's at an angle that if it continued in that same path would take it off the road to the right; is that accurate?
A. Actually, no. There is a vehicle shape right here in the middle that is essentially parallel to the roadway. There's -- there's a vehicle shape here which is angled off the road. There's a vehicle shape here which is angled back onto the road. Then there's actually one more vehicle shape which is positioned right here --
Q. Right. I'm talking about --
A. -- that's parallel.
Q. -- the -- the first one.
A. Oh, yes.
Q. Okay. At that angle, if that same path continued to be followed, would it be accurate to say

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that it would take the vehicle off the road to the right?
A. Sure, if you didn't change the tra -- the trajectory, yes.
Q. So as she was exiting the road at the angle shown under Line 17, you don't disagree that she needed to straighten the wheel -- straighten out the vehicle by turning the wheel somewhat to the left. You're just -- I hate to use the word. You're -- but you're critical of what you consider the oversteer that put the vehicle into a counterclockwise rotation?
A. Let's not confuse oversteer because oversteer is a real specific vehicle dynamic term. It's an overcorrection, and, yes, she has to put in some left

steer.
Q. We both agree that she needed to put in some left steer as she was coming off onto the shoulder to straighten it out and not go off the road but not an aggressive -- we both agree that she shouldn't have put in an aggressive left steer that would have put the vehicle into a counterclockwise rotation, if that's what happened?
A. If that's what happened? That is what happened, but, yes, it is --
Q. I understand that's your opinion.

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A. It is -- I just want to make sure we're clear on the record here --
Q. Oh, we're --
A. -- when I'm answering that question because that is what happened. But yes, there are -- there is a left steer that is necessary because of the trajectory that her vehicle is taking as it goes off the road to the right.
Q. Do you have an opinion after the driveshaft broke off from the transmission end what the driver would have heard inside the bus as she was going down the road?
A. After it broke off from the --
Q. Transmission.
A. -- the transmission end?
Q. Right.
A. I would expect there would have been a lot of loud banging.
Q. How about vibration?
A. Sure, I would expect there would be some vibration as well.
Q. Do you know if there would be any vibration in the steering wheel?
A. I don't.
Q. You don't know or --

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A. I don't know.
Q. Okay. Under -- under normal braking -- going back to your calculations a minute ago -- how long would it take to decelerate from 69 miles per hour to 55 miles per hour for this motor coach?
MS. DORMAN: There you go.
Q. (BY MR. HAYNES) Let me ask you normal and panic, and, again, I'm looking for -- I may have phrased it inappropriately. I'm looking for distance.
A. Up to 55 miles per hour, is that what you said?
Q. Yes, decelerate from 69 to 55.
A. Okay. At normal deceleration rate, you would drop that speed in 283 feet, and in the more panic braking deceleration rate, you would drop that speed

in 123 feet.
THE VIDEOGRAPHER: I have two minutes left.
MR. HAYNES: Okay. You can change it.
THE VIDEOGRAPHER: Off the record at 3:23 p.m., ending Tape 4.
(Recess taken, 3:23 p.m. to 3:30 p.m.)
THE VIDEOGRAPHER: On the record at 3:30 p.m., beginning Tape 5.

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Q. (BY MR. HAYNES) Mr. Rucoba, do you have an opinion as to whether -- well, at what point on Exhibit 17 the motor coach became uncontrollable?
A. Well, I think it's pretty clear when you look at the path of the vehicle in that left turn that Ms. Morado was quickly running out of time and distance with which to countersteer her vehicle. Within a fraction of a second of time, she's going to be across the road and into the median. So her control, when she inputs the steering here, she has control; she is the one that is guiding the vehicle and is --
Q. At Marker 17?
A. Yes, sir. Shortly thereafter, because of the amount of steer that she's put in, all control has completely been lost. She has nothing she can do other than just ride it out and slide into the median because there isn't enough time and distance left at her disposal.
Q. And if I'm understanding you right, you're not able to quantify the amount of steer that you claim she put into the vehicle?
A. Right. Once she puts in the steer, again, I can't give you a magnitude. The best I can tell you it was hard enough and fast enough to put it into a

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slide.
Q. You're not able to tell us whether you're talking about a 90-degree steer or a 180-degree steer or more than that?
A. Right, I think that that's where --
Q. You would defer to somebody else?
A. I would defer to Mr. Granat because he's done some testing and probably can give you some guidance in that area.
Q. And the point where you believe the motor coach -- motor coach became uncontrollable would be somewhere around Marker 18 on your Exhibit 17 diagram?
A. Well, certainly by -- given what she has done and the amount of steer that she's put in, shortly after she puts in the steer and the vehicle begins to react because of the amount of steer, she doesn't have much time.
Q. I'm asking you where that would be on your

diagram.
A. Certainly that would be somewhere in the realm of seven -- of 18 and 19, Stripe 18 and 19.
Q. Okay. Thank you. So whether it was the amount of steer that was put into the vehicle or some other problem that caused the vehicle to go left, once that counterclockwise rotation began, the vehicle --

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the motor coach was, for all intents and purposes, uncontrollable?
A. Based on my reconstruction, the only forces that are going to turn that vehicle to the left are her steering forces.
Q. I know we have a disagreement about that, but I'm just trying to get by that disagreement and -- and find something we can agree about. I think it is that once the vehicle began that counterclockwise rotation, it was pretty much uncontrollable?
A. Yes, following the path she has chosen, yes, that's correct.
Q. Do you have a commercial driver's license?
A. I do not.
Q. Never driven a motor coach?
A. I have not.
Q. Have you reviewed Mr. Irwin's report?
A. Yes.
Q. His deposition?
A. Yes.
Q. Do you agree with all of his opinions?
A. I just got his exhibits. So I have not really delved into them. There are some things that I think we are in line with or close with in terms of opinions. There is, I think, a little discrepancy on

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some other issues.
Q. Where are the discrepancies?
A. From what I've read so far, I think his interpretation of those initial tire marks differs from mine. I believe he's got the outer tandems making those initial two tire marks. I've already told you I believe it's the right front and the right rear tag axle.
Q. Any other discrepancies?
A. Can I see that --
Q. The summaries?
A. -- summary?
Q. Sure. I just don't know where they are.
A. I think I might have them. Right behind me. Here it is.
Q. Did you find them?
A. I did. I did. (Reading.)
I -- like I said, I just got his exhibits. I have not studied the work that he did with his HEV analysis. I would just in general say I

would caution anyone on using that program because it hasn't been validated for motor coaches.
Q. Okay. So you've reviewed his -- his report, his deposition transcript, and his exhibits?
A. I just got the exhibits.

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Q. You haven't looked at them yet?
A. I have not really delved into those yet.
Q. You have not reviewed his HVE reconstruction analysis?
A. Correct.
Q. Okay. So any other discrepancies that come to mind beyond y'all's interpretations of the initial tire marks?
A. That's all I can see right now.
Q. All right. Do you have any criticisms of Mr. Fugger's opinions in this case or his reconstruction?
A. Yes. Again, in general, looking at the HVE simulations, again, I would, number one, caution someone from using the HVE program with a motor coach simulation because it hasn't been properly validated yet for a motor coach. But I do question application of Mr. Fugger's HVE simulations wherein he is applying steer inputs to the tag axle and applying them in road wheel angles that are exceeding the design capability of the -- of the motor coach. I question whether or not that's valid -- valid science.
I've also looked at Mr. Fugger's reconstruction drawings and --
MR. HILL: You want to get your --

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MS. DORMAN: Here.
THE WITNESS: Sure.
A. -- and I've brought those today. I've made some notations on -- on those drawings which reflect discrepancies in the --
MS. DORMAN: If we can roll this up --
A. -- in his own reconstruction.
MS. DORMAN: -- real quick while --
MR. HAYNES: Yeah, I think we're pretty much through with this. We can put them right here.
A. I'll give you --
MS. DORMAN: I'm trying to get this one out of the way.
THE WITNESS: I am going to leave it right here right where it's at.
MS. DORMAN: Okay. Got it.
A. Like, for instance, when I'm looking at this reconstruction drawing that was part of Mr. Fugger's file materials, he's got the vehicle shape here. This is the initial tire mark where he's got the tag or the outboard tandem positioned on the very first tire mark. Then as he progresses to the -- through the

next phase of the reconstruction, all of a sudden the same tire mark is now being made by the inboard tandem. And it doesn't make any sense why all of a

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sudden this tire mark would all of a sudden be created by a completely different tire mark in this reconstruction.

Q. (BY MR. HAYNES) Let me make sure I'm following you. You're saying in Mr. Fugger's reconstruction, he's got the first tire mark being made by the outboard -- right outboard tandem wheel. Then further down the road he's got the same tire mark being made by the inboard tandem wheel on the right.

A. Right. Or let me -- let me back up because it's the initial tire mark, if you look at his vehicle shape, is being made by the outboard tandem or the outboard tag axle. I'm not sure which one he's assigning to that. But the bottom line is that as he moves further down the road, all of a sudden it's the inboard tandem making that tire mark.

Q. The same -- you think it's the same tire mark?

A. Well, it is. You can see it. It's a continuous line, and all of a sudden now it switches. I mean, there's something --

Q. It switches from either the outboard tandem or right tag wheel to the inboard tandem?

A. Correct. Correct, with no break in the mark.

Q. That's -- that's shown on your overlay?

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A. Yes.

Q. Is there anything else on your overlay?

A. No, that's the only notation that I made on that particular overlay.

Q. Okay.

A. Then let me see here. This is the one I'm trying to get to. This was a -- this was another drawing, another reconstruction drawing that was provided by Mr. Fugger. If you look at where the vehicle begins here, this is the very first vehicle shape here and then --

Q. And just for the record, this diagram that we're looking at has Glen --

A. Reuschling.

Q. -- Reuschling's name at the top?

A. Right. Right.

Q. Okay. All right. I'm sorry. I didn't mean to interrupt you. I just wanted to make sure that's identified.

A. No, no problem.

But what I'm saying is that if you follow this -- these vehicle shapes that are on this drawing, all of a sudden then there's this odd rotation to the vehicle. Then it goes back into

traveling in a direction parallel to the roadway.

Q. Okay. So the odd rotation to the vehicle is where the label "E3" is?
A. Correct.
Q. That's what you're calling the odd rotation to the vehicle?
A. Right.
Q. Then basically it's angled a little bit to the right. Then in the next location it's pretty much straight?
A. Right. It can't do that. You cannot physically turn this motor coach in this kind of an angle and then turn it back in this amount of time with a vehicle that's traveling at 70 miles per hour. It's just not possible.

Then if you move a little bit further on down, what you see is you've got this tire mark. It's a green mark right here that is now being made by the tag axle. The tag axle is the only one that's on the mark. Then as it moves down a little bit further -- I don't know if you're going to be able to see this with your color-blindness, but this is the green line here. I'm sorry. I didn't mean that derogatory.
Q. That's quite all right.
A. The -- there's a green line that's here. I'll lead you down here. You can see it's on the tag axle here. As he moves it down here, all of a sudden, now the green line is here, and the tag axle is down here. Now he's assigning it to the inboard tandem. It's the same -- it's the same mark.
Q. Okay. So on this diagram that has Glen Rueschling's name on it, you're critical of -- how do we identify what we're talking about here unless -- I guess maybe we need to copy this.
A. We can probably just copy this and where my notations are.
Q. Yeah, let's do that. We'll mark this as Exhibit 31.

(Exhibit Number 31 was marked.)

Q. (BY MR. HAYNES) Is this something that you could have a copy made for us?
A. Yes, I can do that.
Q. Full size like the other one?
A. Sure, I can do that.
Q. Okay. Go ahead then. That -- we won't have to be so detailed in the explanation.
A. Okay. Now you look at here, let's say this is a -- this is a pink line here. You can see you've got this pink line positioned on the inboard tandem of the Number -- Number 2 axle, I'm sorry, inboard tandem on the right side. Just follow that line down here.

It follows right here. All of a sudden now it's sitting on the outboard tandem.
Q. We're talking about from E7 to E8?
A. Right. Right. Then -- then you follow it and you say, okay, well, now I've got the tag axle is kind of close to that mark and all of a sudden you go down a span of just another -- not even a compete vehicle width and now the tag axle is completely off that mark. Now he's put the inboard tandem on that mark. Then he's also got the vehicle rotating clockwise. Do you see how the vehicle shape is now turned in the clockwise direction -- I'm sorry -- counterclockwise direction? Then all of a sudden it goes back to the clockwise direction.
Q. Down there by E10?
A. Down there by E10. Then you get to E10. Now all of a sudden the vehicle takes a jump. As it goes from here to the very next shape, it takes a jump. You can see there's an offset there. So it's moving sideways, and you just physically can't do that.
Q. Anything else?
A. No, that's pretty much it. I think in looking at the early phase of the reconstruction, this is -- just some -- there's some glaring errors in this and --

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Q. And is it your understanding that this is a document that was prepared by Mr. Fugger?
A. Yes, I took these directly from his file.
Q. What other criticisms do you have of his opinions or reconstruction analysis?
A. Well, let me see if I've got --
MS. DORMAN: I'll roll that up in a second. It's kind of loud.
THE WITNESS: All right.
A. Well, I think we've already touched on this several times where it was his opinion on Page 63 where he was referring to the Americanos testing and referred to it as being a test where they replicate the dynamics that occur with a non-locked tag axle. I think we've discussed that several times that clearly that's not what's being done with the addition of the external ram mounted to the axle.
Page 117 of his deposition where he talks about the first tire mark. He said it's a single tire mark, that he initially said it was coming from the tag axle. Then he changed his opinion. Now he -- in the deposition, later on he said that it come -- it came from the inner dual of the drive axle on the right side. I've already told you that we disagree on that.

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On Page 186 of his deposition, he says that he doesn't see any physical evidence of furrowing

at the rear during the lateral movement of the bus. The furrowing is occurring at the front, not the rear.

I will show you some photographs that show that not only is there furrowing at the rear, but the rear axles have been buried in dirt at its point of rest. That's important because I believe there is an extensive amount of furrowing that is happening in that median as this vehicle is spinning and sliding and rolling to its point of rest.

Q. (BY MR. HAYNES) Why don't you pull those photos now while we're thinking about it.

A. Sure.

MR. HAYNES: I think maybe some of our exhibit photographs got stuck back over there in the bottom of what he was just looking at. No, right there.

MS. DORMAN: Oh, both. Yeah.

MR. HAYNES: I just want to pull them out before we have to look for them later.

MS. DORMAN: Good catch.

A. I think this is a good photo that shows the right side Number 2 and Number 3 axles are --

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(Exhibit Number 32 was marked.)

Q. (BY MR. HAYNES) I'm going to mark that as Exhibit 32.

A. That will be fine.

-- are digging up dirt. At the point of rest, they've got dirt piles in front of them which are classic signs of furrowing. You can even see the outboard tandem on that right side is almost completely covered up with -- with dirt. It's down into the ground so deep. That's important.

Q. Yeah. What's the significance of that in your opinion?

A. It's important because there are forces that are imparted to this bus that moved that tie rod both laterally and forward, and the only place that can happen with enough force is going to be at the point where this bus is furrowing in the dirt and the dirt is providing the resistance as it digs in.

Q. Why do you say that's the only way that tie rod could have been moved?

A. Well, it's because of the fact that the tie rod itself, being that it's a stiff member, has no direct contact. There are no marks on the tie rod that indicate -- that are indicative of being struck by something hard. So how does the tie rod then

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become displaced? The reason it becomes displaced is it has a force applied to it that is both lateral as well as from rear to front. The only time you can ever generate a large enough force in the correct

orientation is when the vehicle is furrowing with its axles in that final spinning process and rolling process.

MS. DORMAN: Those are your exhibits.

MR. HAYNES: Thank you.

MS. DORMAN: Sure.

Q. (BY MR. HAYNES) So if I'm understanding you right, you are saying that the tie rod was bent by the furrowing in the ground as opposed to being struck by the -- the driveshaft after it came loose from the transmission end?

A. No. What I'm saying is that the tie rod is indirectly loaded. It's loaded through the wheel on the right side. Those forces are large because they have to be lateral forces and forces that come from rear to front in order to displace the tie rod in the fashion that is -- that it is at its point in rest. The only time you can get large enough forces like that in that direction is when the bus is rolling and sliding and furrowing in dirt, particularly when it's on its side and its rear end is leading.

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Q. Right. So when you say the only time you could get the forces necessary to bend that tie rod would be in the furrowing of the bus in the ground, that means you're ruling out that it could have been caused by the loose driveshaft striking it?

A. Correct.

Q. I just want to make sure we're on the same page about what you believe and don't believe.

Do you believe that it's scientifically possible for the fractured driveshaft that's loose at the transmission end to bend the tie rod?

A. Not without leaving some physical evidence.

Q. Your examination of the bus did not reveal any physical evidence indicative of the tie rod having been struck by the driveshaft?

A. Correct.

Q. Any other criticisms of Mr. Fugger's reconstruction analysis?

A. Yes, I disagreed with Mr. Fugger in that I could tell you that when you look at those tire marks that are being made by tandems on the left side, particularly where they are in a wavy pattern, oscillating in a wavy pattern, that those are striations that are being created in the tire mark. I believe Mr. Fugger is of the opinion that those are

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not striations.

Q. Anything else?

A. Yes, I -- I would rely upon the work that was done by -- by Mr. Granat in response to a question that was posed to Mr. Fugger on Page 262 of his deposition. The question was, "Generally, if a coach

is going down the road and the steerable tag axle becomes unlocked, those wheels -- those tag wheels will continue to caster right behind the drive wheels, correct?"

That answer was, "That's correct. Unless there is a pertubation that can get -- to get that to start --"

And I think that the testing that was done by Mr. Granat when you study the testing that was done by Mr. Granat, I think it's a clear indication that that opinion is -- is wrong.

Q. I wasn't sure from what you read what opinion you're referring to.

A. The -- the answer that the tag wheels themselves are going to start to turn one way or the other due to some pertubation in the roadway. I think when you look at the testing done by Mr. Granat, I think that that refutes that opinion pretty clearly.

Q. That's based on your review of his video?

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A. Yes, and my discussions with Mr. Granat.

I think in general that's it. And I know we also pre -- previously touched on the test run that was provided by your experts or the log of the test runs that were provided by your experts. I had made some notations on that, but I'd already talked about that, that the reason the bus is going out of control and sliding out when you look at the testing is that it's a fact that the drive axle was locking up. That's why the vehicle goes into a spin.

Q. Okay.

A. It's got nothing to do with the tag axle being forcibly steered over.

Q. Yeah, we discussed that earlier. I'm not sure I've seen that document with your notes on it. May I see that?

A. Sure.

(Exhibit Number 33 was marked.)

Q. (BY MR. HAYNES) I'm going to go ahead and mark this as Exhibit 33, and can you read for me your notations for each test run?

A. Yes.

Q. Read that into the record.

A. It says Number 1 or Test Run Number 1, "no test footage."

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Test Run Number 2, "no slide out."

Q. What does that mean?

A. Meaning that the bus does not slide out. It just tracks and comes to a stop.

Test Run Number 3, "drive axle locked up, spin."

Q. What are you attempting to say there?

A. What I'm saying is that in this test, the

drive axle wheels locked up and the vehicle went into a spin.

Number -- Test Run Number 4, "no slide out."

Test Run Number 5, "drive axle locked up, spin."

MR. BULLION: Hello.

A. Test -- Test Run Number 6, "no slide out."

Test Run Number 7, there is no video. So, I have no comments.

Test Run Number 8, "no slide out."

Test Run Number 9, "no slide out."

Q. (BY MR. HAYNES) Okay. And I think there was a diagram or something under this.

A. Yes, this is --

Q. What is that?

A. -- Brian Lawson's notes. They were provided

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by Mr. Fugger.

Q. What expertise do you have in identifying whether tire marks on a roadway are from locked tires?

A. Are we done talking about Mr. Fugger's things?

Q. Did you have something else?

A. I did. I did, one more thing.

Q. Well, thanks for --

A. Sure.

Q. -- pointing that out.

A. Sure, no problem.

Q. Tell me what it is.

A. When you look at the material that was provided by Mr. Fugger, there were a number of simulations that were outputs of his HVE program. There is one simulation where the bus rolls over and slides out to a stop. I've gone through all of the HVE simulations that Mr. Fugger provided and that simulation, the input and the output parameters and the computer simulation run itself that is associated with that animation are not in his file materials. It's labeled as Animation Number 4 or, I'm sorry, Accident View 4, and there is no computer simulation that -- that follows and re-creates that motion that is seen in that animation file.

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What Mr. Fugger had said in his deposition was he said if you take the animation that he created, which was called Simon Texas, and you ran that and you turned on the dimesh feature -- dimesh is a option that is in the HVE program -- that the bus would roll over. Well, I did that. And when I turned on the dimesh that, the bus does not roll over. It just slides out on its wheels. So I am missing the simulation that shows the bus falling onto its side and sliding and spinning out to a stop.

Q. Anything else?
A. No, I think that's -- that's it.
Q. What expertise do you have in identifying whether tire marks on a roadway are from locked tires?
A. Well, there's a lot of areas of expertise that I have -- bring to bear in that -- in that area. Number one --
Q. Let me just kind of try to go by area, and then you tell me within the different areas. Any education about that?
A. Sure. I've gone and taken a couple of different courses that have to do with accident reconstruction, but most notably, one of them is put on by Northwest Traffic Institute. It's a computer -- I'm sorry. It's a reconstruction class that has to do

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with basic and accident reconstruction and investigation. It's sort of a foundational class. It's nationwide, well known. It's one of the ones where you get the initial examples of various types of skid marks and tire marks that are made on roadway surfaces.

Secondly, there are a number of different accident reconstruction periodicals and treatises that are out there that have to do with the creation of tire marks under various conditions. Carr Engineering maintains a library of all of those type of documents. I have reviewed everything on accident reconstruction in the Carr Engineering library, and I stay abreast on that by staying in touch with the accident reconstruction articles that come out on a yearly basis from the Society of Automotive Engineers.

Then lastly, I've performed numerous types of braking tests and turning tests or steering tests and a variety of vehicle dynamics type tests which basically show what kind of tire marks are created under various types of handling conditions, be they braking marks, be they acceleration marks, be they yaw marks, be they a combination thereof. Over the years having done that kind of testing with a

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variety of vehicles, it gives me a broad understanding of the various types of tire marks that can be created with various types of vehicles.

Q. Anything else under education?
A. No, I think -- I think in a --
Q. I think you kind of covered education, training, and experience there.
A. Yes, I did.
Q. Did you rely on or review any of the materials from your Northwest Traffic Institute course or the accident reconstruction periodicals in Carr Engineering's library in coming up with your opinions

regarding the tire marks in this case?
A. Yes, with regard to looking for examples of those very unique, wavy type marks from the -- that were being created on the roadway surface when the driveshaft was disconnected. I --
Q. Did you find anything?
A. Like I said, earlier I had gone through a literature search, but I had also gone and went through the library materials and my own personal accident reconstruction materials looking for something that would be a good example of those types of marks.
Q. And I think you told us earlier that you

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didn't find anything?
A. I did not.
Q. Did you consult any materials from your accident reconstruction and investigation course at Northwest Traffic Ins -- Northwestern Traffic Institute or any other accident periodicals in Carr Engineering's library for your analysis and conclusions about the other tire marks on the road?
A. No, I didn't need to do that because they're pretty typical, but if it comes time for trial exhibits, I may have to go to one of those types of documents and pull out examples of locked wheel skid marks if that becomes a major issue.
Q. Okay. My question is just to date you didn't do that in coming up with your opinions?
A. I did not.
Q. You said you've been involved in various testing over the years regarding skid marks, and did you go back and look at any documentation about that in coming up with your opinions in this case?
A. No, I did not, other than going back and trying to find out in our database did we have anything in the way of a tire mark being created by a vehicle that has a disconnected driveshaft, and we had nothing in our database.

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Q. I want to go through a few things in your report. Hopefully we're on the downside of the day here if it makes anybody feel any better. I'm talking about your --
MR. HILL: I hope we're way down the downside.
MR. HAYNES: Yeah, I think so.
Q. (BY MR. HAYNES) Looking at your August 11, 2011, report --
MS. DORMAN: If we just crested that curve, we're in trouble. Sorry.
Q. (BY MR. HAYNES) In Paragraph 4 you say the first physical evidence located by the police was pieces of metal from the driveshaft U-joint, right?

A. That's right.
Q. Are you -- I know the -- I think on your diagram that we had out earlier you had the E1, E2 marks that the DPS had.
A. Right.
Q. Are you referring to any other pieces of metal other than what DPS has previously identified?
A. I am not.
Q. So I think the -- I may not be remembering this right, but I think you said the first physical evidence was that silver ring?

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A. Yes, that's correct.
Q. Is that what you're referring to in the first sentence of Paragraph 4?
A. Yes.
Q. You mentioned in Paragraph 4 your exemplar -- exemplar bus inspection.
A. Yes, I see it.
MR. HAYNES: Can I have those documents?
Q. (BY MR. HAYNES) Where was that conducted?
MR. HAYNES: I'm going to need some more of these. Oh, thank you. Thanks.
A. That was conducted at the MCI Service Center in Los Alamitos, California.
Q. (BY MR. HAYNES) On August the 2nd, 2011?
A. Yes, sir.
Q. And can you just kind of generally tell me what that was about? Then we'll get into more specifics.
A. Yes. In general, I was just trying to get an understanding of what it would take to get a driveshaft out from underneath that vehicle given the physical constraints that are in the undercarriage structure. I just -- I was trying to understand how can you get a driveshaft out and what, if any, contact

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you could make with any of the undercarriage components with the driveshaft either in a limited connection capa -- limited connection situation or a fully disconnected situation.
Q. And just, again, kind of a summary fashion, what was your -- what answer did you come up with?
A. What we found out was that when you disconnect the driveshaft on the transmission side, that it's very difficult for the driveshaft to do anything but bang around in the tag axle pass-through or what some people call the "horse collar." In other words, the driveshaft itself tends to stay in that area. It tends to be constrained in that area. It can't get out and get down into an area between the tag axle and the -- the tie rod. It can't get into an area where it can contact the locking plates. It's

essentially constrained by that, and it's also constrained by the loop that is near the drive axle.

Then what we found is that when we disconnected the driveshaft at the differential, that it was also extremely difficult to maneuver the driveshaft into anything but contact with the loop and the tag axle pass-through. Essentially what we found was that we were unable to get it to come into contact with the back side of the tie rod, could not get it to

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fall into that space between the tie rod and the -- the tag axle.

So then what we found was that the only way to be able to get that out of those two constraints, we had to push up on the passenger side axles, and once we did that, we created a space such that you could then rotate that driveshaft and get that driveshaft to move around and be able to come out from underneath the undercarriage of the -- of the bus and get out from underneath the two main constraining components and then it was free. Then we'd be able to have it separate from the bus.

Q. Explain that again. You would have to push up on the passenger side what?

A. Right. Push up on the passenger side tires, on the axles on the passenger side. So in other words, simulating it as if it was loaded and leaning on its passenger side as if it's about to tip up and tip over. Once we did that, we found that there was enough relative movement in the undercarriage components such that it created a path such that you could get the driveshaft out.

Q. How did this exemplar inspection get set up?

A. It was set up by Mr. Dacus and Mr. Hoogestraat.

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Q. By the MCI engineer and the MCI lawyers?

A. Yes, sir.

Q. And how were you contacted to become involved in that inspection?

A. Mr. Dacus informed me that there was a bus that we could take a look at in California. We could disconnect the driveshaft, and we could look at ways to get that driveshaft out from underneath the vehicle.

Q. All right. So did you have any contact with anyone from MCI before you went out there?

A. No, sir.

Q. So who was orchestrating this, if not you?

A. Mr. Hoogestraat and Mr. Dacus.

Q. All right. So your only contact with anybody about this inspection before you arrived was Mr. Dacus, MCI's lawyer?

A. And Mr. Hoogestraat. I wasn't in direct

contact with Mr. Hoogestraat, but the only person --
Q. Were or were not?
A. Was not. The only person that contacted me was Mr. Dacus.
Q. Okay. And so you talked to Mr. Hoogestraat about it for the first time after you got to the inspection?

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A. Correct.
Q. And was -- was the parameters for the inspection and what y'all were going to do, was that all set up ahead of time or was there -- did you have some input in what was happening once you arrived?
A. The former.
Q. It's getting late in the day. It's better if you don't answer that way.
A. Oh.
MS. DORMAN: The first thing you said.
MR. HAYNES: I know.
Q. (BY MR. HAYNES) Sorry. I don't ever remember what the first part was anymore.
MS. DORMAN: It was done in advance.
A. Yeah, done in advance.
Q. (BY MR. HAYNES) Everything was decided before you got there?
A. Yes, sir.
Q. Okay. And so --
A. That's funny.
Q. So basically were you just an observer and Mr. Hoogestraat was -- was taking the lead on what was being done and so forth or -- or not?
A. No, we were working together.
Q. Okay. So he had set everything up and -- and

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decided on what was going to happen, but once you got there, you had some input in it as well?
A. He set it up. In other words, he had the bus ready. It was up on the jack stands. It was ready to go, and -- and we proceeded together.
Q. Who else was present?
A. Mr. Dacus, and then there was a -- an MCI service manager that was there that I mentioned earlier; but I don't remember his name. And a couple of mechanics were coming through and helping take off bolts and do things when we needed them.
Q. Who was in charge of documenting what happened?
A. I was in charge of taking pictures and notes for my own edification. I'm not sure if Mr. Hoogestraat took pictures and notes or if it was just me alone. I don't remember if he was taking photos.
Q. So you may have been the only secretary there?

A. Maybe. Maybe.
Q. In any case, there wasn't any separate cameraman or videographer or anybody documenting things apart from you that you know of?
A. That I know of, and the only other person
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that could have been taking any pictures would have been Mr. Hoogestraat.
Q. Did you see him take any pictures?
A. I don't remember him taking any pictures, but, you know, I won't say that there are none from him. I just don't remember.
Q. Was there a pre-inspection meeting after you got there on the morning or afternoon that the inspection happened?
A. Just a brief one. I brought my reconstruction diagram for Mr. Dacus and Mr. Hoogestraat to see.
Q. And I assume y'all -- the three of y'all discussed what you were going to do in the inspection?
A. Yes.
Q. What do you remember being said?
A. Basically what we did. We were going to take it one step at a time and try to figure out how can you get this driveshaft out from underneath this vehicle; what kind of constraints are present underneath this vehicle,; what can the driveshaft hit at what points in time when it's constrained in the various conditions.
Q. I assume that y'all discussed documenting the test?
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A. Yes, in the fashion that -- that I brought my camera and my notes to record what we were doing.
Q. Was -- did anybody mention the possibility of videotaping what y'all were going to be doing?
A. No.
Q. Never came up?
A. No, it did not.
Q. Mr. Dacus didn't bring it up?
A. No, nobody did.
Q. Why did you -- why didn't you bring it up? You're not going to tell me you didn't think about it.
A. I brought my camera. I mean, I brought my 35-millimeter camera, and I felt that was sufficient.
Q. Did it ever cross your mind at any time either before you got there or in the -- after you got there and before the testing began that it might be a good idea to video -- videotape what y'all were doing?
A. No, I thought my photos and notes were excellent.
Q. So you're telling us that it never even entered your mind that videotaping this test should be

considered?
MS. DORMAN: Object to form, asked and answered.

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A. Right. I'm telling you that I felt my photos and notes were sufficient.
Q. (BY MR. HAYNES) Tell me about the exemplar bus. What was the make and model and year?
A. The bus was manufactured in August of 1995. It was a model 102-DL3. Its VIN number was 1M8PDMPA5SP047805.
Q. All right.
(Exhibit Number 34 was marked.)
Q. (BY MR. HAYNES) I think I know what page you're reading off of, and I marked that as Exhibit 34; is that correct?
A. Yes, sir.
Q. And is that your handwriting?
A. Yes, sir.
Q. What was the engine type on the bus, on the exemplar bus?
A. I don't think I recorded that information.
Q. What was the -- what type of transmission was in the exemplar bus?
A. An Allison B500.
Q. Where are you -- where are you looking at that?
A. I'm looking on my second page. I wrote that down yesterday. It's on the page that is -- says

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"driveshaft -- 77 pounds," and I wrote down there on a separate sheet here.
Q. Which one is it?
A. It's going to be that one there. On that sheet right there, on the bottom yesterday I wrote down the transmission was an Allison B500 with a retarder.
Q. Where is it? It's not on this one?
A. No, it's not.
Q. Okay.
A. That's what I'm saying. I wrote that down.
Q. Okay. I'll just mark yours, yours instead of mine.
(Exhibit Number 35 was marked.)
Q. (BY MR. HAYNES) Okay. We've marked that as Exhibit 35.
What other information is on this page?
A. It says August 2nd, 2011, "Exemplar Bus Inspection, Los Alamitos, California, MCI Service Center."
Q. What does it say under that?
A. It says "3 and three-quarter inches down to 1 inch driveshaft stroke under compression." What I had done is taken some measurements of the driveshaft

in its fully connected condition, and then we
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disconnected it at the transmission and compressed it. I wanted to see what the gap was, the difference in the gap or the amount of stroke under compression that the driveshaft went through. Those are my measurements of that.
Q. The 3 and three-quarter to 1 inch?
A. Right. Then I also took a measurement of the frame housing width which is about 5 and a half inches. Then I took a measurement of the tire treads and noted that each of the treads was approximately 1 inch wide.
Then I made a note of what the proper term was for the various components that we were taking off of the driveshaft universal joints. There was two caps, one U-joint, two half round straps, and two straps with locking tabs.
Then I had asked the mechanic to go and get the driveshaft weighed. They came back and said it was weighed, 77 pounds and 6 ounces.
Q. Okay. Are there -- I was provided a bunch of photographs from the exemplar inspection. Are there photographs that correspond to those notes?
MS. DORMAN: Time on tape?
MR. HAYNES: What?
Q. (BY MR. HAYNES) Do you want to use these so
0199
we can mark them?
A. Are those mine?
Q. That's my understanding. Tell me if they're not.
A. They look like it.
Q. Do or do not?
A. They do. Okay. Here's a few photos that I took.
Q. Why don't we mark -- mark them, and then I'll have you identify them.
A. All right.
(Exhibit Number 36 was marked.)
Q. (BY MR. HAYNES) I'm handing you what I've marked as Exhibit 36. Can you identify that?
A. Yes, that's my photo that I took at the time of my exemplar bus inspection.
Q. What does it show?
A. And it shows the driveshaft in its extended state with both ends connected, both universal joints connected.
(Exhibit Number 37 was marked.)
Q. (BY MR. HAYNES) Let me show you what I've marked as Exhibit 37. Can you identify that?
A. Yes, this was after we had disconnected the driveshaft at the transmission end and compressed the
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driveshaft. I wanted to document how much it compressed in that -- in those two conditions.

(Exhibit Number 38 was marked.)

Q. (BY MR. HAYNES) Let me show you what I've marked as Exhibit 38. Can you identify that document?

A. Yes, I wanted to record what the width of that housing was or the tag axle pass-through. I needed to stick my tape measure in there to record the width of that.

Q. And what was the width?

A. The width is approximately 5 and a half inches.

(Exhibit Number 39 was marked.)

Q. (BY MR. HAYNES) Then can you identify Exhibit 39?

A. Yes, this was a photo that I took after we had taken off some of the key components on the driveshaft, and I laid them out and took a photo of them. These correspond to the various items that I wrote down on that sheet of paper.

Q. Are there any other photographs that you took that would be explanatory of the documents -- of the notes that are in Exhibit 35?

A. No.

Q. You better take that out before we lose it

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and leave it out here so she can make a copy of it. Otherwise, at the end of the deposition everybody will go, "Who's got that exhibit?" And nobody will be able to leave until we find it.

(Exhibit Number 40 was marked.)

Q. (BY MR. HAYNES) Okay. Let me show you what I've marked as Exhibit 40. Can you identify that document?

A. Yes, that's my handwritten notes of the disassembly steps that we followed as we went through the process at the exemplar vehicle inspection.

Q. Okay. Can I look at that one while you're looking at yours?

Okay. What I'd like to do is go through each of these, 1 through 5, and at the same time have you pull out photographs that document photographically what you're describing, if there are any.

A. Okay.

Q. So do you still have that stack over there? Do you want to find them first, or do you want to just find them as we go through them?

A. Yeah, why don't we do it, find them as we kind of go through.

Q. Okay. What is --

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A. So --

THE VIDEOGRAPHER: I have five minutes

left.
MR. HAYNES: Go ahead and change it and then he can be looking through the photographs.
THE VIDEOGRAPHER: Off the record at 4:28 p.m., ending Tape 5.
(Recess taken, 4:28 p.m. to 4:37 p.m.)
(Exhibit Numbers 41 through 72 were marked.)
THE VIDEOGRAPHER: On the record at 4:37 p.m., beginning Tape 6.
Q. (BY MR. HAYNES) Mr. Rucoba, I think you identified some documents while we were off the record that go along with Item 1 in Exhibit 40, "driveshaft photographed -- both U-joints attached," correct?
A. Direct.
Q. And I have marked those as Exhibits 41 through 55; is that -- is that correct?
A. Correct.
Q. And then what is Item 2? That's just --
A. This is --
Q. So basically in 1 you just took photographs of the driveshaft when it was connected at the differential end and the transmission end?

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A. Correct.
Q. Then in Number 2 you took photographs of the driveshaft with the -- disconnected at the transmission end?
A. Right.
Q. And it says, "Driveshaft still constrained by 'horse collar.'" What are you referring to there? Is that part of the testing? Are those your notes from that part of the testing?
A. Right. Right. I'm referring to the tag axle pass-through.
Q. And what did y'all do once -- what was the task? Once y'all disconnected it from the transmission end, what -- what did y'all do?
A. What we did is we looked and compressed the driveshaft and tried to see if there was a way that you could free the driveshaft out from inside the tag axle pass-through, but it was constrained.
Q. I guess I'm asking in a more layman's person format. Did you turn on the vehicle and observe it, the driveshaft rotate or --
A. No.
Q. What did you do?
A. We just manipulated it by hand. In other words, lifting it up, rotating it around, trying to

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figure out if there's a way that it could be maneuvered and manipulated to get out from the constraint of the tag axle pass-through.
Q. And the photographs that relate to that

you've identified, and I've tried to mark them as 56 through 72; is that correct?
A. Yes, this is with -- these would be ones that pertain to Step 2?
Q. Yes, sir.
A. Okay.
Q. Those are the ones you handed me, I believe, that pertain to Step 2.
A. Okay. Right, that's Exhibits 56 to 72.
Q. And do these -- do any of these photographs show -- who was attempting to manipulate it by hand to see what it would do?
A. It was myself and Mr. Hoogestraat and the MCI technician that was there undoing the bolts.
Q. Did anyone take pictures of -- take photographs of y'all attempting to manipulate it by hand to see what it might con -- come into contact with?
A. Nothing beyond what you might see right there in those pictures.
Q. Okay. I don't see anybody doing anything in

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these pictures; would you agree?
A. Right. Well, in other words, we've just tried to show and illustrate that this is what happens with regard to its placement when you compress the shaft and you lay it down in the -- in contact with the tag axle pass-through.
Q. When you say "compress the shaft," what do you mean?
A. I mean literally it has a spline shaft inside it so that it can compress, and that's when you looked at my notes earlier where it said 3 and three-quarters down to 1 inch where I was measuring that gap or the differences in the gap, the compression of that driveshaft, that's what I was referring to.
Q. And why is it that y'all felt that it was sufficient to just move it around by hand and see what would happen versus actually start up the engine and -- and watch it flail away if it's disconnected on one end?
A. I felt this was just as adequate, didn't see a need to start it up.
Q. Nobody mentioned that that might be a good idea?
A. No.
Q. Do you think that y'all were able to simulate

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by moving it around with your hands the same action that might take place if -- and the same force that might take place once the vehicle was started up with the driveshaft disconnected at one end?
A. No, not with regard to the same force. I'm sure the forces would be greater, but with regard to

trying to take the driveshaft and figure out what objects it could or could not hit in a step-by-step fashion was -- this was the best method.

Q. Why was that better than actually starting up the engine and -- and videotaping what happened?

A. Because you could -- you could systematically look at each individual step as we were disconnecting it and as we were manipulating and moving the driveshaft around. You don't have that luxury or that advantage when you just start it up and let the driveshaft rotate.

Q. I see what your -- I see your point in that that would be something you would want to look at by manipulating it by hand, but wouldn't the follow-up true test be to start up the engine and see if it -- see what happens?

A. I think we know what happens. We've got the accident vehicle pictures that show what happens, but we're -- that -- that's already been done. What we

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need to do is in a more systematic fashion.

Q. So no one ever brought up or discussed or suggested maybe we ought to start up the engine and -- and see what damage is caused?

A. No.

Q. No one suggested maybe we ought to start up the engine and see if it contacts the tag axle lock and unlocks it?

A. No, sir.

Q. No one suggested that maybe we should start up the engine and see if the drive -- disconnected driveshaft will contact the tie rod and bend it?

A. No, sir, not starting it up.

Q. What do you mean "not starting it up"?

A. We started looking at that in the systematic fashion.

Q. Not with the engine going?

A. Correct.

Q. And no one thought or at least no one suggested or brought up in the meeting that y'all had before this testing started that it might be a good idea to start up the engine and see if it will unlock the tag axle and bend the tie rod and move the tag axle tires?

A. Correct.

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Q. You didn't think of that?

MS. DORMAN: Object to form, asked and answered.

Q. (BY MR. HAYNES) I'm asking if you thought about it.

A. Again --

MS. DORMAN: Object to form, asked and answered.

Q. (BY MR. HAYNES) I'm sorry. What was the answer?
A. Again, what I felt is that the systematic approach that we went through was the best approach.
Q. I understand you felt that was the best approach. I'm asking if you thought about starting up the engine to see what would happen.
MR. HILL: Object to form.
A. No, there was no need. That had already been done.
Q. (BY MR. HAYNES) No, you did not think about it?
A. No, I didn't think about it because that had already been done.
Q. Okay. Did you find the pictures that correspond to Number 3?
A. Yes, those are those right there.

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Q. Thank you, sir.
MR. HAYNES: Will you mark those?
(Exhibit Number 73 through 77 were marked.)
Q. (BY MR. HAYNES) All right. The notes for "transmission U-joint removed," for Number 3, "Transmission U-joint remove -- driveshaft still constrained by 'horse collar.'"
Okay. So the Number 2, it's -- it was just disconnected. The driveshaft was disconnected from the U-joint for the transmission. And Number 3 y'all actually removed the U-joint. Is that the distinction?
A. Yes, sir.
Q. And, again, did y'all just manipulate the driveshaft by hand in -- in the test for Number 3?
A. Yes, sir.
Q. And are the photographs in Exhibits 73 through 77, do they document the testing that was done for your notes for Number 3?
A. Yes, sir.
Q. Thank you. What about for Number 4, have you been able to identify those photographs?
A. Yes, sir.
Q. Tell me what y'all did with the -- with

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respect to your notes for Number 4.
A. We disconnected the U-joint at the differential and tried to maneuver the driveshaft in its compressed state out from underneath the constraints of the loop and the tag axle pass-through.
Q. So this was -- it was disconnected at both ends?
A. Yes, sir.
Q. And when y'all -- again, did y'all start the engine?

A. No, sir.
Q. So you disconnected at both ends and just laid it down in the "horse collar"? I'm trying to understand what -- if you have the photographs, maybe that will help me.
A. I think you've got the photographs.
(Exhibit Numbers 78 through 83 were marked.)
Q. (BY MR. HAYNES) I've got the photographs. Okay. So Exhibits 78 through 83 document what was done with respect to your notes for Number 4; is that correct?
A. Yes, sir.
Q. So it looks like y'all disconnected it on both ends and just laid it down in the "horse collar";

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is that right?
A. With those pictures, yes. What we tried to do is raise it up on one end, lower it on the other, tried to figure out ways to move it front and back in order to make it come out of the two constraints. We were not able to do that.
Q. And -- okay. Didn't turn on the engine?
MS. DORMAN: Object to form, asked and answered.
Q. (BY MR. HAYNES) Right?
A. Correct.
Q. Then for Number 5, do you have the photographs that correspond to what y'all did for Number 5?
A. Yes.
Q. This is the test where y'all said that you were able to get it out of the "horse collar" if you -- if you pushed up on the passenger side tires to simulate the vehicle tipping over?
A. Correct.
Q. So what happened when y'all did -- how did y'all push up on the passenger side tires?
A. There was a lift mechanism that they brought in and we placed underneath the tires and then raised it.

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Q. Did y'all start the engine?
A. No, sir.
Q. What happened when y'all raised it with the lift?
A. There was enough relative movement between the tag axle pass-through and the loop such that you could then maneuver the driveshaft out from the two constraints.
(Exhibit Numbers 84 through 87 were marked.)
Q. (BY MR. HAYNES) And the photographs that correspond to your notes for Number 5 are 84 through

87?
A. Correct.
Q. Then the rest of the photographs that you have there from the exemplar inspection, what do those show --
A. Just some photo --
Q. -- in general?
A. Some photographs of the vehicle identification plates, the way that the bus was positioned on the -- the lift, some of the photographs of the parts that were removed, and some photographs of various components on the undercarriage that were in their undamaged states so that I could have those

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for potential trial exhibits.
Q. I'm just going to mark these --
MR. HAYNES: What number are we on?
MR. TIJERINA: 88.
MR. HILL: 88 exhibits?
Q. (BY MR. HAYNES) -- as --
MS. DORMAN: Going for a record.
Q. (BY MR. HAYNES) -- as Number 88 all together. Okay?
A. That's fine.
(Exhibit Number 88 was marked.)
Q. (BY MR. HAYNES) All right. You say in Paragraph 8 of your report, "In my inspection of an exemplar bus, I found it impossible to replicate the contact mark between the driveshaft and the locking plates when the transmission joint was disconnected," right? That's what it says?
A. Right.
Q. And what you're referring to there is what you've been describing where you disconnected the driveshaft from the transmission joint -- from the transmission side, and you, you or Mr. Hoogestraat, manually tried to maneuver it around to see if it would contact the locking plate?
A. Right. In the spots it had deformation on

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the crash vehicle.
Q. And what you're saying is -- is that it wouldn't reach or it wouldn't get out of the -- the "horse collar" to make those -- to reach those places or what are you saying exactly?
A. Yes, all of that.
Q. Describe it for me in your own words, please.
A. That it won't get out of the constraints, mainly the loop or the "horse collar."
Q. Loop and the "horse collar," is that the same thing?
A. No, they're two different ends.
Q. Okay. And the loop and the "horse collar"

made it impossible for the driveshaft to replicate the contact marks found in the bus, subject bus after the accident?
A. Correct.
Q. Was it -- did you -- did your inspection of the -- and testing of the exemplar bus, did you determine that it was impossible for the driveshaft when disconnected from the transmission end to make contact with the -- to unlock the tag axle?
A. I'm sorry. I didn't understand that question.

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Q. With the -- with the plate for the tag axle, was it -- was it possible to make contact with that?
A. I'm sorry. You lost me.
Q. It's my understanding the tag axle locks, has a locking pin.
A. Yes.
Q. And my question is was it -- did you determine that it was impossible for the driveshaft to make contact with that, that area of the tag axle locking plates when it was disconnected on the transmission end?
A. Which area on -- which area are you talking about.
Q. In your inspection and testing, did you find that it was impossible for the driveshaft disconnected at the transmission end to contact other component parts in the undercarriage?
A. Outside of the contact that could be made with the tag axle pass-through?
Q. Right.
A. No. What we found was that only the tag axle pass-through is where contact was made in that condition.
Q. And what is the tag axle pass-through? What are we talking about?

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A. Some people call it the "horse collar."
Q. Okay. So did the "horse collar" or tag axle pass-through, did that prevent the driveshaft when disconnected at the transmission end from making contact with other component parts?
A. Yes, that and the loop itself.
Q. What is the loop?
A. The loop is the loop that's down at the other end near the driveshaft differential --
Q. Differential?
A. -- differential connection.
Q. Okay. So your testing showed that the loop at the differential end and the tag axle pass-through or "horse collar" prevented the driveshaft from disconnecting at the transmission end, from making contact with other component parts in the

undercarriage?
A. Correct.
Q. So based on that testing, do you believe that in this accident that the driveshaft did not make contact with other component parts and that the markings found in the subject bus after the accident were not caused by contact with the driveshaft?
MS. DORMAN: Object to form.
A. Certainly with regard to the -- the marks

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that were made on the -- we'll call it the -- the rear side of the -- of the tie rod, it does not appear likely that you can get contact in that area. So in other words, you cannot get a force behind the tie rod or between the tie rod and the tag axle to force the tie rod forward and become disengaged. That was not possible given the constraints that are on the undercarriage of this bus.
What I said in my dep -- in my report was that only after disconnecting the driveshaft on both ends and only after loading up the passenger side such that you could put the tires in jounce, then we were able to create an opening whereby the driveshaft could be maneuvered out from underneath the undercarriage of the bus, and only then would you get into a situation where you would be able to come into contact with any of the undercarriage components.
Q. (BY MR. HAYNES) So your testing showed that without doing that, it's not possible because it's -- the driveshaft is constrained by the "horse collar" and the loop at the differential end?
A. Yes, it's constrained by those two objects once both U-joints have separated.
Q. But if it's only -- if the driveshaft is only separated from the transmission end and still

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connected at the differential end, then it's not going to make contact with those component parts in the undercarriage because of the loop at the differential end and the tag axle pass-through or the "horse collar"?
A. Correct.
Q. So, I mean, it sounds like your testing showed that -- that Americanos' theory that the driveshaft made contact with the component parts and caused the unlocking of the tag axle is impossible. Is that what you're saying?
A. Correct. I think -- I think more likely -- I think the better answer is that, as an expert, that more likely than not the science shows that you cannot create the theory that has been put forth by Americanos' experts.
Q. And are you saying more likely than not instead of it's impossible because you didn't start up

the bus and see what would happen?
A. No, I'm saying that --
MS. DORMAN: Object to form.
A. No. I'm saying, as an expert, the best that you can say is more likely than not. I'm here to -- I'm here to talk about probabilities, not possibilities. And being that I'm an expert, I can

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tell you that based on our science and the work that we did, the Americanos theory cannot happen.
Q. (BY MR. HAYNES) You're -- you're saying that it's not just improbable, but it cannot happen?
A. I think we're saying the same thing. It is unlikely. It is improbable.
Q. And cannot happen?
A. Cannot happen.
Q. And you believe that even though you only manipulated it by hand and didn't actually start up the bus to see what would happen --
MS. DORMAN: Object to form.
Q. (BY MR. HAYNES) -- in a dynamic situation?
MS. DORMAN: Object to form.
A. I do.
Q. (BY MR. HAYNES) You don't think that if you had started up the bus and -- with the transmission end disconnected and see what would happen in a dynamic situation that the results would have been any different?
MS. DORMAN: Object to form.
A. Correct.
Q. (BY MR. HAYNES) Now, the last sentence in your report in Paragraph 8 -- sorry -- in the -- Page 3 of Paragraph 8 says, "To date, no clear

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evidence has been produced that shows the impact mark on the locking plate while the bus was on its side at the point of rest." What are you talking about there?
A. Well, there is a mark that has been pointed out by your experts which is supposed to be indicative of the driveshaft striking the locking plates. And I went and studied all of the photos that have been produced to date before the vehicle was righted, and there is no clear picture which shows that contact mark on those plates prior to the vehicle getting turned back onto its wheels.
Q. Is there a clear picture of that contact mark before and after the vehicle gets righted?
A. There are certainly marks after. There are certainly photos that show those marks after the vehicle has been righted.
Q. What I'm asking is you're saying that there is a contact mark in the photo after the vehicle was righted that Americanos' experts have pointed to.
A. Sure.

Q. I'm asking is there the -- a photo of the same location before the vehicle was righted that shows there was no contact mark?
A. No, there is no good photo that's been taken in that area.

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Q. In Paragraph 7 you say, "My discussions with other defense experts in this matter indicate that the universal joint failed due to improper maintenance and was not caused by improper design." Do you see that?
A. Yes, sir.
Q. What discussions with other defense experts are you talking about?
A. Wait a second before I lose it.
Q. It's right here.
A. What paragraph?
Q. Paragraph 7.
A. Oh, sorry.
Q. The second sentence.
A. Oh, discussions with Mr. Hoogestraat.
Q. Is he the only one?
A. Yes, sir.
Q. And did he tell you that the universal joint failed due to improper maintenance?
A. Yes, sir.
Q. Have you done any independent analysis to determine whether or not that is or is not true?
A. I have not.
Q. You're not expressing an expert opinion in this case as to whether or not improper maintenance caused the universal joint to fail?

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A. Correct. I'm relying upon Mr. Hoogestraat.
Q. Do you know the basis for his opinion?
A. No, I do not.
Q. And I guess he told you that the universal joint did not fail because of improper design?
A. Correct.
Q. And, again, are you -- do you have an expert opinion in this case one way or the other about that?
A. I'm relying upon Mr. Hoogestraat.
Q. And have you analyzed the basis for his opinion in that regard?
A. I have not.
Q. Okay. I'm going to ask you a few questions here. We're almost through, believe it or not. I know Justin doesn't believe it.
MR. HILL: You're right.
MR. HAYNES: I guess you could bring up something. That would mean we're not through.
Q. (BY MR. HAYNES) If the tag axle is free to steer and it steers, will the tag axle tires eventually lock due to steer angle/slip angle?
MS. DORMAN: Object to form.

A. I don't know how to answer that question. I need more information.
Q. (BY MR. HAYNES) Do you not understand it or --
A. No.
Q. Let me repeat it --
A. Well --
Q. -- because -- let me repeat it because it's kind of long.
If the tag axle is free to steer, are you with me so far?
A. I am. Which means unlocked?
Q. Right.
A. Okay.
Q. And it steers.
A. I don't understand that part of it. What does that mean?
Q. That the tag axle tires -- it's unlocked and the tag axle tires turn.
A. Under normal forces, normal -- normal driving forces or under the forces of a ram being placed on it.
Q. Under whatever forces that that happens.
A. That's a big difference.
MS. DORMAN: Object to form.
Q. (BY MR. HAYNES) Well, under normal forces.
A. Okay. Under normal driving forces. Okay.
Q. Will the tag axle tires eventually lock due to steer angle?
A. I think the answer is no. I would refer -- defer to the testing that was performed by Mr. Granat. I think he'll be able to answer that -- that question.
Q. Would a tag axle tire normally steer under hard braking in a straight line?
A. I think you would have to ask Mr. Granat that question because I believe he did some brake tests.
Q. You don't know the answer to that?
A. I do not.
Q. Should a tag axle tire steer under hard braking in a straight line?
A. Again, any kind of braking test like that I think would be best answered by Mr. Granat.
Q. You don't know the answer?
A. I do not.
Q. Would a tag axle tire steer under hard braking in a right curve?
A. Again, I think that's a good question for Mr. Granat.
Q. You don't know the answer to that one either?
A. I do not.
Q. Should a tag axle tire steer under hard

braking -- should a tag axle tire steer under hard
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braking in a right curve?
A. Should or --
MS. DORMAN: Object to form.
A. Should or will? I mean --
Q. (BY MR. HAYNES) The question is should a tag axle tire steer under hard braking in a right curve?
A. I think --
MS. DORMAN: Object to form.
A. I think I'd need to know more about that in order to be able to answer that question.
MR. HAYNES: Can we go off the -- for a couple of minutes, and I'll see if I have anything else?
MR. HILL: Can I go?
MS. DORMAN: Do you want him to go?
MR. HAYNES: Sure.
MR. HILL: Is that okay?
MR. HAYNES: Yeah.
MR. HILL: All right.
MS. DORMAN: Have you got enough mike?
MR. HILL: One of those days.
EXAMINATION
BY MR. HILL:
Q. Okay. Good afternoon, Mr. Rucoba.
A. Good afternoon.
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Q. My name is Justin Hill. Other than this morning, you and I had never met, had we?
A. We have not.
Q. We had never spoke on the phone?
A. Correct.
Q. We had never talked about your opinions in this case, had we?
A. We have not.
Q. We didn't hire you in the case, did we, the plaintiffs?
A. No, you did not.
Q. You were hired by a defendant in this case?
A. True.
Q. I've had no input with regard to your opinions?
A. True.
Q. I never saw your -- you know, any of the work you did or had any input into the work that you were doing on this case, did I?
A. True.
Q. I want to ask you a few questions, kind of clean up some of the things due to some of the objections. I want you to be able to tell your side of the story on some of the issues we touched on or Mr. Haynes touched on early on.
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MR. HAYNES: Objection, sidebar.
Q. (BY MR. HILL) You stated that why -- you stated the testing at Bosch is not something you would have done. Why is that testing not the type of testing you would have done?
A. As I understand the purpose of the testing based on the depositions that I've read, the purpose was to document the dynamics of the bus under the conditions of a tag -- of a tag axle locked and unlocked. And if you're going to do that, you would do that and perform that under normal roadway conditions, and that should be done using the bus in its as-designed state with the tag axle locked or unlocked and then scientifically documenting what characteristics the bus possesses under those conditions.
However, what made the Americanos testing unscientific was the fact that they had introduced external forces, instrumentation that would provide external forces and rendered the data useless because they had equipped the bus, their test bus with a hydraulic ram that introduced external forces to the wheel that were not roadway type forces. So, therefore, that's what I was saying is why the testing is unscientific and is essentially useless.

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Q. Okay.
MR. HAYNES: Objection, nonresponsive.
Q. (BY MR. HILL) Would you explain for the jury what you mean by the testing not being scientific?
A. Well, like I said, I think in -- in contrast to that, I think you would look at the work that was done by Mr. Granat where you are taking the bus as designed and documenting the -- the characteristics of the bus and whether or not its controllability has some bearing on what a driver can or cannot do under the conditions where it's locked or unlocked or its dynamics under the conditions of where it's locked or unlocked.
What Mr. Granat did was merely unlock the axle and then document and scientifically record his findings. I think that's the proper approach. No external devices were added to the bus to control the forces that the tires and the bus would see on these road conditions.
Q. In your --
MR. HAYNES: Objection, nonresponsive.
Q. (BY MR. HILL) In your opinion, is the testing done by Mr. Granat scientific?
A. Yes, in my opinion, it is. It follows in a scientific manner.

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Q. If you were to craft your own testing to be performed in this case to determine how a bus is

dynamically affected by an unlocked tag axle, would you have done the same type of testing that Mr. Granat did?
A. Sure, I would. I have done similar type tests, although not with unlocked and locked tag axles, but I have conducted similar type tests in my past. They followed a very similar method to that which was followed by Mr. Granat.
Q. Do you think that the Bosch testing bus-handling characteristics were substantially similar to the actual bus involved in our accident?
A. No. They're going to be modified because of the presence of the external ram which is applying forces to the wheels.
Q. Would you agree with me that a bus' or a vehicle's braking characteristics will affect the controllability of that bus?
A. Sure.
MR. HAYNES: Objection, form, leading.
Q. (BY MR. HILL) Have you seen --
MR. HILL: This is a defense witness. I am the plaintiff. I can lead him.
MR. HAYNES: Well, you can -- I can make

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what objections I need to. I don't think you're adverse.
MR. HILL: It's a plaintiff and defendant.
Q. (BY MR. HILL) Mr. Rucoba, have you -- have you seen anything outlining or detailing the braking characteristics of the bus, the Bosch testing bus to allow you to make any determination whether or not the braking characteristics of that bus were substantially similar to the braking characteristics of the bus involved in this accident?
A. No, I haven't seen any of the braking characteristics for the Bosch test.
Q. Are you aware that in the Bosch testing that a steering damper was modified on the testing bus?
A. Yes. I believe it's my understanding that the steering damper was removed.
Q. What is your understanding of the role that a steering damper plays?
A. The steering damper is something that takes out sudden changes laterally, in this particular case with regard to the component that the steering damper is attached to.
Q. Is it your understanding that the Bosch testing bus tag axle tires had a greater range of

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motion in terms of degree than the bus actually involved in this accident?
A. Yes.
MR. HAYNES: Objection, form, leading.

A. Yes. It is my understanding that there -- the way that the forces were put in initially broke one of the steering stops. Because that steering stop was broke, now that they were going to be applying forces to that axle, they could put in larger degrees of steering at the road wheels than would ordinarily be designed into the vehicle.

MR. HAYNES: Objection, nonresponsive.

Q. (BY MR. HILL) Did you read Mr. Fugger's deposition?

A. I did.

Q. Okay. Did you hear Mr. Fugger testify that they made it possible for the tag axle tires to turn at a -- at 33 percent larger angle of degree each direction than the bus involved in this accident?

A. I think it was 33 percent, but I thought it had to do with travel in inches.

Q. He stated that the travel in inches of the bus involved in the accident was 2 inches, and on the bus in the Bosch testing, they allowed it to travel 3 inches. Do you remember that?

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A. I do remember that testimony.

MR. HAYNES: Objection, form, leading.

Q. (BY MR. HILL) Would you, in your opinion, say that a 33 percent change in how much the tag axle is allowed to move in one direction or the other is substantially similar to the bus involved in this accident?

MR. HAYNES: Objection, form, leading.

A. No, not if it's beyond the design criteria of the bus.

Q. (BY MR. HILL) Have you reviewed the Bosch testing?

A. Only in video form --

Q. Okay.

A. -- and -- and the small amount of written data that had to do with the test log that I talked about earlier today.

Q. All right. Let me ask you this: Do you have an opinion one way or another whether or not the road surface where the Bosch testing occurred was substantially similar to the road surface where the accident occurred?

A. It's my understanding and from what I could see of the testing, it appears that they began on some dry asphalt type surface, but then they performed

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their braking tests on a Jennite surface which has a lower coefficient of friction.

Q. For the ladies and gentlemen of the jury, can you explain how that would affect the braking characteristics of the bus -- the bus used in the Bosch testing?

A. Sure. I think that it's going to apply in two ways: It will allow the axles to lock up quicker than they normally would if it was on dry pavement or a pavement that had a higher coefficient of friction; it also affects the dynamics in that the bus will now slide out or spin out because it's on a lower coefficient of friction surface.

Q. You stated earlier that, in your opinion, Ms. Morado's steering inputs were first to the right and then to the left. Without talking about degrees, let's talk in generalities. Was that a fair representation of what you testified to earlier?

A. Yes, if we're talking about the path of the vehicle in the tire mark creation.

Q. And that's a good point to make. Let's just talk about just with regard to the tire mark creation. Would you agree with me that her steering inputs were first to the right and then back to the left?

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A. Yes, sir.

Q. Are you aware or do you know what steering entries were used in the Bosch testing and whether or not they were substantially similar to the -- to the steering inputs of Ms. Morado?

A. I've made no comparison.

Q. Okay. Did you see any testing where they went right and then went back to the left?

A. I saw no testing where they went back to the left. All the testing that I saw was either straight ahead or to the right.

Q. Did you see any testing where the bus turned in a counterclockwise direction in the Bosch testing?

A. No, I saw no such testing.

Q. You'd agree in this accident the bus turned in a counterclockwise direction?

A. Yes, it did.

Q. Has your CV been marked?

MR. HAYNES: No, it has not.

Q. (BY MR. HILL) Do you have a copy of your CV?

A. Let me pause for a second here.

MR. HAYNES: I've got one here if you want to use it.

MR. HILL: Do you mind?

MR. HAYNES: No.

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MR. HILL: Okay. Do you have an exhibit over there? I don't -- I don't even know what we're on. 90? 89?

MR. HAYNES: 190, I think.

(Exhibit Number 89 was marked.)

Q. (BY MR. HILL) Mr. Rucoba, I'm going to hand you what I've marked as Exhibit 89 to your deposition. What is that document?

A. It's a copy of my current CV.
Q. It's current as of what date?
A. It's current as of this year. It looks like probably about the middle of this year because it's got a paper that I presented in the middle of this year.
Q. Okay. Talk to me a little bit about what type of education you have that bears on your qualifications as an accident reconstructionist.
A. Sure. We sort of touched on that a little bit earlier today. First off, you really can't go to college to get a degree in accident reconstruction. Where you get your initial exposure to that is through the various textbooks and seminars and courses that are available to -- to people that become accident reconstructionists and accident investigators.
Like I said earlier, I've gone and taken

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a number of different courses that were offered by the Northwest Traffic Institute. I've taken courses offered by Engineering Dynamics which offers the use of the computer program EDSMAC, EDCRASH. They are the folks that sell the computer program HVE. I've also taken courses in the PC Crash computer program. I've taken seminars in how to read EDR, event data recorders, for heavy vehicles such as the DDEC module that we're talking about today.
I've also gone and run a number of different types of crash tests. Crash tests in and of themselves, I think, are extremely helpful because it gives an accident reconstructionist knowledge as to what kinds of forces and deformation are created under various types of conditions. I've run vehicle to fixed object, vehicle to vehicle, rollover type crash tests and have documented under -- the physical evidence that's created under those types of controlled conditions.
I'm also a member of the Society of Automotive Engineers, American Society of Mechanical Engineers, and I stay abreast of all of the accident reconstruction materials that are produced on a yearly basis. We also have a history of all the accident reconstruction materials that have been produced in

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the past three decades, and Carr Engineering maintains that library. I've read all of those documents that have to do with the accident investigation and reconstruction.
I've also conducted a number of different actual driving tests. I've conducted tests where I've caused vehicles to accelerate and create marks on the ground, brake marks, yaw marks. I've taken them through handling courses. I've driven vehicles through potholes and driven through various

types of maneuvers to both get an understanding of what it requires a driver to do as well as what kind of physical evidence is created on the ground.

I've also gone and just reconstructed a whole number of different types of crashes. I've reconstructed well over 1,600 crashes in my career. I've done a number of different types of rollover crashes. I've done a number of different types of -- or investigated a number of different types of crashes involving a wide variety of tire marks such as the types that we're talking about here today.

Q. Let me ask you a little bit about your experience. You've been an accident reconstructionist for 25 years?

A. Yes, sir.

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Q. With Carr Engineering that whole time?

A. Yes, sir.

Q. About -- I know it's hard for you to calculate, but about how many accidents do you think you've reconstructed in that 25 years?

A. Oh, well, I'm well over 1,600 now.

Q. How many of those involved either motor coaches or large commercial vehicles?

A. Several dozen.

Q. Several dozen?

A. Yes, sir.

Q. Other than what you listed for us just a second ago in your experience, is there any other education or training or specialized knowledge that you drew from in forming your opinions in this case?

A. Aside from the -- the technical documents that I've brought here today and my own experience, of course, I looked at the testing that was generated, not only by Mr. Granat but the testing that was done by Americanos. Again, that was information that I found helpful because I needed to understand all of the different aspects that go into this particular accident reconstruction.

Q. And your actual education is in mechanical engineering?

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A. Yes, sir.

Q. Did you draw from your education in mechanical engineering in trying to understand and make opinions based on the mechanics in this case?

A. Sure. I think you get a basic understanding of the dynamics of the vehicle in engineering school. Sure.

Q. Let's talk about some of the work you did in this case. I looked at your report. You inspected the bus?

A. I did.

Q. How many times did you inspect the bus?

A. Once.
Q. You inspected an exemplar bus?
A. I did.
Q. You went out and saw the scene where the accident occurred?
A. Yes, I did.
Q. You reviewed -- and I'm guessing, but I bet you've seen thousands of photos. There's been thousands of photos taken in this case.
A. Yes, that's true.
Q. You reviewed the DPS' accident reconstruction?
A. Yes, I did.

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Q. Along with their entire report and witness statements?
A. Yes, I did.
Q. You looked at what appeared to be all the ex -- all the expert reports in this case other than damage experts, as far as I could tell?
A. There are still a few I have gotten in I have not yet reviewed, such as Mr. Longoria, Mr. Yohe. There are a few others that have come in, but I have not had a chance to read them yet.
Q. Okay. You watched the Bosch testing videos?
A. I did.
Q. You looked at Mr. Granat's testing?
A. I did.
Q. Then I know you talked about some of the depositions that you read that maybe there is more now than there are in your report, but you've read the DPS officers' reports --
A. I have.
Q. -- or depositions? I'm sorry.
A. I have.
Q. You read the deposition of Ms. Morado?
A. I have.
Q. Then you reviewed the deposition testimony of a few eye -- few eyewitnesses or bus passengers is

0241

what it looked like.
A. I have.
Q. Then also you did a full reconstruction in this case. Would you agree with that statement?
A. Yes, I would.
Q. It included determinations of vehicle speeds?
A. Correct.
Q. Braking inputs?
A. Correct.
Q. Movements of the bus?
A. Correct.
Q. Then ultimately the complete path of the bus?
A. Correct.
Q. Let's talk about some of the opinions that

are either in your report or you've discussed today. Okay?
A. That will be fine.
Q. All right. One of your opinions is that at the start where the tire marks begin, it's your opinion that the bus was braked hard enough to put tire marks on the ground and at the same time was turned to some degree to the right?
A. Correct.
Q. What is your basis for that opinion?
A. The physical evidence, the tire marks

0242

themselves.
Q. Okay. Did you consider the DPS' reconstruction in forming that opinion?
A. Only in that I utilized some of their photos and their survey to formulate that opinion.
Q. How about the deposition of Ms. Morado?
A. Yes, I did rely upon that in that it gave me some insight into the steering inputs and the number of inputs that she made based on that deposition testimony.
Q. Okay. Did you base this opinion on your education, training, experience, and the work that you've done in this case?
A. I did.
Q. Do you hold that opinion to a reasonable degree of engineering and accident reconstruction probability?
A. I do.
Q. I know there was a lot of time spent talking about the first tire mark and what it was. I think your opinion is that it is a skid mark caused by braking?
A. Correct.
Q. What is your basis for that opinion?
A. It's the fact that it's a lone tire mark.

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It's a tire mark that ultimately leads up to a tire mark that's clearly being made by the tag axle. It's a tire mark that can only be made by either the tag axle or the right front tire because it's a singular tire mark, and it cannot be made by the tandems.
Q. Okay. Mr. Fugger testified that this is something he called a scrub mark. Yet he couldn't define what a scrub mark was. You've stated it's a skid mark caused by braking. What is it specifically about this mark that allows you to make the determination that it's a braking skid mark?
A. The fact that you can see it's a long, black continuous mark. Then as you see as the mark gets darker and wider, you can actually see those longitudinal striations that are clearly identified in the middle of the mark.

Q. Do you base your opinion that this first mark is a braking skid mark on your education, training, experience and all the work you've done in this case?
A. Yes, sir.
Q. Do you hold that opinion to a reasonable degree of engineering and accident reconstruction probability?
A. Yes, sir.
Q. In your report, you state the cause of this

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crash was driver error. Did I read that correctly?
A. Yes, sir.
Q. What -- what is the basis of that opinion?
A. The basis of that opinion is -- is that when you look at the physical evidence and you can see that as Ms. Morado is steering her vehicle to the right under the action of steering and braking, that she positions her vehicle in the area of the right-hand shoulder. It's at that point in time that she chose to put in a hard enough steer to the left to cause the vehicle to go into a slide.

There were other choices that were available to her had she decided to choose those. She had the option to straighten her vehicle out and follow the path on the roadway that was parallel to the travel lanes even though she may have even been partially or fully on the shoulder. She had the option to apply brakes to the vehicle and bring the vehicle to a controlled stop had she decided to do that. The steering system and the braking system were not compromised when the driveshaft failed.

Q. In forming this opinion, did you rely on your own accident reconstruction in this case?
A. Sure, and that was one of several pieces.
Q. Did you also rely upon the accident

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reconstruction and determinations made by the Texas Department of Public Safety?
A. Sure.
Q. Did you also consider and use as part of the basis of your opinions some of the witness statements on the bus with regard to the actions of the bus and some of the things they felt way upstream from when the bus lost control?
A. Yes, in -- in general, there were some helpful pieces of information from the bus passengers.
Q. And you read all the passenger depositions that were taken in this case, didn't you?
A. I read a lot of them. I don't know if I've read all of them though.
Q. Did you consider that in making the opinion that the cause of the crash was driver error?
A. It gave me a general understanding of the conditions leading up to the ultimate loss of control,

but I relied more on the physical evidence.
Q. Okay. Did you make this opinion based on your education, experience, training and all the work you've done in this case?
A. Yes, sir.
Q. Do you hold the opinion that the cause of this crash was Ms. Morado's error, do you hold that
0246
opinion to a reasonable degree of engineering and accident reconstruction probability?
A. Yes, sir.
Q. There was some time spent on you discussing you saw no evidence that the driveshaft ever actually impacted the tie rods. Do you remember that?
A. Yes, sir.
Q. Will you tell us how you came to that opinion that the driveshaft never actually impacted the tie rods?
A. Sure. You can look at the physical evidence on the back side of the tie rod. It had no evidence of direct contact with something that would cause it to bend or buckle. Then we looked at the -- just the motion of the driveshaft itself when we were talking about the exemplar inspection, trying to get the driveshaft to get itself in a position where it could contact the back side of the tie rod. We were not able to do that either.
Q. Would you agree with the general statement that the loss of a driveshaft creates a loss of power to the drive tires?
A. Yes, I agree.
Q. Do you have an opinion one way or the other if Ms. Morado had just steered straight and done
0247
nothing else, what would have eventually happened?
A. Just by steering straight and not doing anything, the -- by virtue of the fact that the driveshaft was disconnected from the drive axles, the vehicle itself would begin to slow down under its own power or lack thereof.
Q. And as a heavy vehicle, a motor coach, loaded with people, it's going to slow down in a shorter distance than, say, a passenger car, right?
A. Sure, relatively speaking.
Q. All right.
MR. HILL: I think that's all the questions I have. Thank you.
FURTHER EXAMINATION
BY MR. HAYNES:
Q. Do you have an opinion whether Ms. Morado should have known what was happening to the bus after that loud noise went off?
A. Only beyond what I read in her deposition where she had thought that she was having a tire

blowout.
Q. Do you have an opinion why we don't see continuous locked tire skid marks from the point of the first tire mark until the point on the road where the motor coach starts onto the right shoulder?

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A. Continuous locked skid marks from which tire? All of them?
Q. Yes.
A. Yes. She has to let her foot off the brake.
Q. I'm sorry?
A. She has to let her foot off the brake. As she approaches the shoulder, at some point in time she must be letting her foot off the brake. That's why the tires cease making tire marks.
Q. All right. Why aren't there more skid marks from more tires or from all the tires as -- as the ve -- from the location of the first tire mark to where she goes off onto the right shoulder?
A. Well, one of the things that I think is that there may be some sort of brake imbalance with this vehicle, because I would have expected to see an equal number of tire marks on both the left side and right side.
Q. Have you tested that in any way?
A. I have not.
Q. Would you agree with me that your inspection and testing with the exemplar bus in California did not include an analysis of the forces generated by the fractured driveshaft under dynamic conditions?
MS. DORMAN: Object to form.

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A. Yes, this was a static demonstration.
Q. (BY MR. HAYNES) Your inspection and testing of the exemplar bus in California, would you agree that it did not approximate the speed and movement of a fractured driveshaft in a moving vehicle on a highway?
A. In a dynamic sense, it did not.
Q. Did you note in your inspection and testing in California of the exemplar bus whether the latch assembly on the tag axle castered forward, stayed neutral, or castered backward on the exemplar coach?
MS. DORMAN: Object to form.
A. I'm sorry. Could you repeat that again?
Q. (BY MR. HAYNES) Sure. Did you note in your static testing whether the latch assembly on the tag axle castered forward, stayed neutral, or castered backward during your static testing?
A. The latch pin was in place during the entire demonstration.
Q. You wouldn't expect anything different in static testing, right?
A. True.

Q. Is the only documentation, other than the pictures, of what happened during your inspection and testing in California contained in Exhibit 40? To your knowledge, is that it?
A. Is the only documentation?
Q. Of what happened in the -- in the inspection and the testing.
A. Well, I have --
Q. I know you have --
A. -- that --
Q. -- I know we have some other -- two other pages that --
A. Sure.
Q. -- document --
A. All of my pho --
Q. -- some measurements that were taken.
A. All of my --
Q. You have the photos.
A. All of my photos. I mean, my photos and notes are my documentation.
Q. All right. For example, Number 2, "transmission U-joint disconnected -- driveshaft still constrained by 'horse collar.'" That's all the notes that were taken, to your knowledge, of whatever y'all were doing while the driveshaft was disconnected at the transmission end?
MS. DORMAN: Object to form.
A. No. They're supplemented with the photos. Each step is supplemented with photos.
Q. (BY MR. HAYNES) I mean, those are all the notes. If we're going to try to look at the notes and say what were they doing under there, how did they move it, which way did they move it, you know, with -- that's all we have to go on, right, plus the photos?
MS. DORMAN: Object to form.
A. No. You've also got that other page, which is 35, and that was also something that was recording what was happening, what changes were being made in the various steps.
Q. (BY MR. HAYNES) This is all, right, these -- these two pages?
A. There's a third page which identified the vehicle, and that's this page here. I think you've marked that as an exhibit as well.
Q. All right. So 34, 35, and 40 and the photos, that's it, right?
A. Correct. Correct.
MR. HAYNES: I think that's all the questions I have. I appreciate your unlimited patience today.
THE WITNESS: Thank you.
EXAMINATION

BY MR. BULLION (VIA TELEPHONE):

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Q. I've got a -- got a couple, Bob. Can you hear me?

A. We can hear you, Tom.

Q. The lawyer for Americanos asked you about whether you had any opinions relating to the cause of failure of the driveshaft being related to -- or maintenance, and as I heard your testimony, you said that you don't have any opinions yourself. You rely upon Mr. Hoogestraat's -- information from him with regard to that. Did I get that right?

A. Yes, sir.

Q. Is it right that you don't have any opinions outside of Bob about the cause of failure of the driveshaft?

A. Correct.

Q. You just -- that's not something that you've been asked to analyze?

A. That is correct.

Q. Despite that, though, in -- in knowing that the driveshaft did fail on the bus, as I understand your testimony, you concluded that despite that, Mrs. Morado should have been able to control the bus. Did I get that right?

A. That is correct.

MR. BULLION: Those are all of my

0253

questions. Thank you.

MS. DORMAN: We'll reserve our questions.

THE VIDEOGRAPHER: Off the record at 5:37 p.m., ending the deposition with Tape 6.

(Deposition concluded at 5:37 p.m.)

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CHANGES AND SIGNATURE

WITNESS NAME: ROBERT RUCOBA

DATE OF DEPOSITION: SEPTEMBER 21, 2011

PAGE	LINE	CHANGE	REASON

0255

I, ROBERT RUCOBA, have read the foregoing deposition and hereby affix my signature that same is true and correct, except as noted above.

_____

ROBERT RUCOBA

THE STATE OF _____)

COUNTY OF _____)

Before me, _____, on this day personally appeared ROBERT RUCOBA, known to me (or proved to me under oath or through _____) (description of identity card or other document) to be the person whose name is subscribed to the foregoing instrument and acknowledged to me that they executed the same for the purposes and consideration therein expressed.

Given under my hand and seal of office this _____ day of _____, _____.

_____

NOTARY PUBLIC IN AND FOR

THE STATE OF _____

0256

CAUSE NO. 2010-03-1717-C

DANIEL CAMPOS, ET AL.,) IN THE DISTRICT COURT OF
)
VS.) 197TH JUDICIAL DISTRICT
)
AMERICANOS, U.S.A.,)
L.L.C., ET AL.) CAMERON COUNTY, TEXAS

REPORTER'S CERTIFICATION
ORAL AND VIDEOTAPED DEPOSITION OF ROBERT RUCOBA
SEPTEMBER 21, 2011
VOLUME 1

I, Donna J. Howson, Certified Shorthand Reporter in and for the State of Texas, hereby certify to the following:

That the witness, ROBERT RUCOBA, was duly sworn by the officer and that the transcript of the oral deposition is a true record of the testimony given by the witness;

That the deposition transcript was submitted on _____, 2011, to the witness or to the attorney for the witness for examination, signature, and return to me by _____, 2011;

That the amount of time used by each party at the deposition is as follows:

Mr. Justin A. Hill - 0 hours, 22 minutes
Mr. Stephen C. Haynes - 5 hours, 29 minutes
Ms. Melissa Dorman - 0 hours, 0 minutes
Mr. Thomas M. Bullion, III - 0 hours, 1 minute

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That pursuant to information given to the deposition officer at the time said testimony was taken, the following includes counsel for all parties of record:

Mr. Justin A. Hill, Attorney for Plaintiff
Mr. Stephen C. Haynes and Mr. Tamara L. Rodriguez, Attorney for Defendant, Americanos, U.S.A., L.L.C.
Mr. John Dacus and Ms. Meliss Dorman,, Attorney for Defendant, MCI
Mr. Thomas M. Bullion, III, Attorney for Defendant, Arvin Meritor

I further certify that I am neither counsel for, related to, nor employed by any of the parties or attorneys in the action in which this proceeding was taken, and further that I am not financially or otherwise interested in the outcome of the action.

Further certification requirements pursuant to

Rule 203 of TRCP will be certified to after they have occurred.

Certified to by me this 29th day of September, 2011.

_____

Donna J. Howson, Texas CSR 6037
Expiration Date: 12/31/11
Compex Legal Services, Inc.
Registration No. 60
11811 North Freeway, Suite 500
Houston, Texas 77060
(713) 861-3900

FURTHER CERTIFICATION UNDER RULE 203 TRCP

The original deposition was/was not returned to the deposition officer on _____;

If returned, the attached Changes and Signature page contains any changes and the reasons therefor;

If returned, the original deposition was delivered to Mr. Stephen C. Haynes, Custodial Attorney;

That $ _____ is the deposition officer's charges to the Defendant, Americanos U.S.A., L.L.C. For preparing the original deposition transcript and any copies of exhibits;

That the deposition was delivered in accordance with Rule 203.3, and that a copy of this certificate was served on all parties shown herein on and filed with the Clerk.

Certified to by me this _____ day of _____, 2011.

_____

Donna J. Howson, Texas CSR 6037
Expiration Date: 12/31/11
Compex Legal Services, Inc.
Registration No. 60
11811 North Freeway, Suite 500
Houston, Texas 77060
(713) 861-3900

0001

CAUSE NO. 2010-03-1717-C

DANIEL CAMPOS, ET AL. X IN THE DISTRICT COURT
X
VS. X 197TH JUDICIAL DISTRICT
X
AMERICANOS, U.S.A., L.L.C., X
ET AL. X CAMERON COUNTY, TEXAS

ORAL DEPOSITION OF
ROBERT RUCOBA
March 23, 2012
VOLUME 2

ORAL DEPOSITION OF ROBERT RUCOBA, VOLUME 2, produced as a witness at the instance of the Defendant Americanos U.S.A., L.L.C., and duly sworn, was taken in the above-styled and above-numbered cause on the 23rd day of March, 2012, from 9:35 a.m. to 2:09 p.m., before Laura D. Glenn, CSR in and for the State of Texas, reported by machine shorthand, at the law offices of Hartline, Dacus, Barger, Dreyer & Kern, 6688 North Central Expressway, Suite 1000, located in the city of Dallas, state of Texas, pursuant to the Rules of Civil Procedure and the provisions stated on the record.

0002

A P P E A R A N C E S

FOR THE PLAINTIFFS
MR. JUSTIN A. HILL (VIA TELEPHONE)
Watts Guerra Craft, LLP
300 Convent Street
Suite 100
San Antonio, Texas 78205
(210) 527-0500

AND

MR. ERIC GREEN
Law Offices of Van Shaw
2723 Fairmount Street
Dallas, Texas 75201
(214) 754-7110

FOR THE DEFENDANT AMERICANOS, U.S.A.
MR. STEPHEN C. HAYNES
Vidaurri, Lyde, Rodriguez & Haynes, LLP
202 North Tenth Avenue
Edinburg, Texas 78541

(956) 381-6602

FOR THE DEFENDANT MCI

MS. MELISSA A. DORMAN
Hartline, Dacus, Barger, Dreyer & Kern, LLP
6688 North Central Expressway
Suite 1000
Dallas, Texas 75206
(214) 369-2100

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6	CD of photos, Roll I, Mt. Gretna crash site inspection.....	19
7	Roll D, E, F, G and H, inspection of all units.....	19
8	CD containing news articles.....	20
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P R O C E E D I N G S
(Beginning at 9:35 a.m.)
ROBERT RUCOBA,
having been first duly sworn, testified as follows:
EXAMINATION
BY MR. HAYNES:
Q. Hi, Mr. Rucoba. I'm Steve Haynes. We met at your last deposition.
Just for the record, would you state your name?
A. Yes. My name is Robert Rucoba.
Q. Let me show you what I've marked as Exhibit 1 to your deposition today.
Can you identify that document for us?
A. Yes. This was the subpoena that I was given for today's deposition.
Q. Okay. And you -- have you produced your whole file on this lawsuit for your deposition here today?
A. Yes, I have.
Q. And as I understand it, it includes documents that were produced at your last deposition and documents that have been either generated by you or received by you since the date of your first deposition on September 21st, 2011 up until today; is that correct?
A. Correct.
Q. One of the -- I'm going through it as we're

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discussing it here this morning. And one of the documents I found that looks like it's been updated is what I've marked as Exhibit 2.
Can you identify that for us?
A. Yes. This is a listing of my most recent deposition and trial testimony.
Q. And that's been updated --
A. Yes --
Q. -- correct?
A. -- it has.
Q. Since your first deposition?
A. Yes, it has.

Q. May I see it again? Thank you. Okay. And it looks like there's one addition to your deposition testimony from January of this year in a case called Johnson versus Hankook Tire. I may not be pronouncing that right.
A. Correct.
Q. Who were you hired by in that case?
A. Attorneys representing Hankook Tire.
Q. And what attorneys were those?
A. Rebecca Ulisse and Bobby Miller were the attorneys.
Q. What law firm are they with?
A. I don't remember the law firm names right now.
Q. What kind of case was that?
A. Tread separation of a passenger vehicle.

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Q. And then it looks like there's one addition on your trial testimony from December of 2011 in a case called Hurge versus Consolidated Container Corp; is that correct?
A. Yes.
Q. Who were you hired by in that case?
A. Attorneys representing Consolidated Container.
Q. Do you remember the name of those attorneys?
A. Yes. Todd Ehrenreich.
Q. What law firm?
A. I don't remember the name of his law firm right now.
Q. I see in the -- in your trial testimony list, it says Orlando, Florida.
Is that where you testified?
A. Yes.
Q. Were those attorneys from Florida?
A. Yes.
Q. The ones that hired you?
A. Yes.
Q. What kind of case was that?
A. That was a -- a load bar that was inside a trailer that fell on a gentleman when he opened up the trailer.
Q. Have you been retained to work on any cases similar to this one since your last deposition?
MS. DORMAN: Object to form.
A. Similar in what -- what means?

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Q. (BY MR. HAYNES) Well, let's be real general to begin with. A motorcoach.
A. A motorcoach, no, sir.
Q. Okay. Let me show you what I've marked as Exhibit 3.
Can you identify that for us?
A. Yes. This is a -- a set of the invoices that have been generated by Carr Engineering in this matter.
Q. And it looks like this includes invoices that would have been sent out before your last deposition and then may have been produced at your last deposition, as well as invoices that have been sent subsequent to your September 2011 deposition; is that correct?
A. Yes, sir.

Q. It will go a lot faster if you do this instead of me. Can you give me a ballpark estimate of the amount of the charges subsequent to your last deposition contained in Exhibit 3?
A. I can add them up.
Q. That's what I mean. It will go faster if you do it.
A. I have approximately $243,000 in invoices here.
Q. Is that the total of all of the invoices in three, or the total of the invoices subsequent to your first deposition in September 2011?
A. That's the total of everything in three.

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Q. I'm not going to mark this unless there's something new on it. This is your CV.
Has it been updated, or is that the same?
A. I don't remember if the -- the last publication was on the CV I brought at my -- my last deposition. There's a publication titled --
Q. Why don't we mark it, then, as Exhibit 4. Thank you. Go ahead with your answer.
A. There's a publication titled An Analysis of Driver Reactions to Tire Failures Simulated With The NADS Advanced Driving Simulator, I believe, is a new publication that's been added to my CV and may not be on the one that was produced at my first deposition.
Q. All right. And so tell me about that paper.
What's that about?
A. That paper is an evaluation of a study that was performed by the National Highway Traffic Safety Administration. It involves a simulator and tread separation events and the -- the findings generated in those simulations. Carr Engineering embarked on a study to analyze the data and to evaluate and critique the -- the work that was conducted in that NADS study.
Q. How did you -- what was your participation in that work by Carr Engineering?
A. I helped analyze data in the raw form, helped arrive

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at the conclusions that were presented in that paper.
Q. And are there any conclusions or findings in that paper or from Carr Engineering's work regarding that paper that are applicable to this case, in your opinion?
MS. DORMAN: Object to form.
A. I -- I think it's helpful only in that it's -- it shows that evaluating what drivers do under various types of mechanical problems is part of my experience and training, and it also is something that I bring to bear, I think, in this particular matter with regard to accident reconstruction and the findings that I've reached in this particular case.
Q. (BY MR. HAYNES) Tell me specifically what you're thinking about.
A. Well, I think it's talking about in terms of what drivers should or shouldn't do in the presence of a mechanical problem. In this particular case and with regard to that

paper, we're talking about a mechanical problem from a tire that has a tread separation.

But that can apply to the same kinds of issues that have been raised in this particular case is that what could the driver of this particular motorcoach have done in the presence of the mechanical problem given the layout of the roadway, given what we see in the way of physical evidence on the road, given the actual mechanical problem itself, given the testing that's been performed either by the engineers for

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MCI or the engineers for Americanos. I think all of those things are things I will talk about.

Q. Okay. So you plan to give testimony about the -- what would have been a reasonable response by Ms. Morado in the face of a mechanical failure on the motorcoach on the date of the accident?

A. Yes, in part; however, I'll also talk about options or choices that were available to Ms. Morado based on my reconstruction and investigation of the crash.

Q. Why don't you tell me all your opinions about that while I'm looking through the rest of the e-mails.

A. Well, sure. I -- I think that going to this newest theory -- well, let me back up. There was an original theory that the tag axle unlocked when the driveshaft failed. And that that, in and of itself, was what caused the vehicle to go out of control.

I think that given the most recent round of testing and what I've seen in the most recent round of depositions, it appears that the Americanos' experts have abandoned that theory. It's a theory that does not lead to loss of control. I think that's something that, I think, was best described by Mr. Yohe in his deposition where he just said that he felt he could drive across country with the tag axle unlocked.

So I think that put that theory to -- to rest

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and it's something that I had opined about in my first deposition that -- that, in and of itself, would not cause a -- a loss of control.

I think the second thing is now having to do with the newest theory that's been put forth by the Americanos' experts, and that is that not only does the tag axle have to be unlocked, but the caster mechanism has to also be unlocked.

And I think the testing that has been performed by the Americanos' experts shows that that is a controllable event, even in the event that you have both of those mechanical failures get created when the driveshaft separates. The vehicle is controllable, that it can be steered, it can be braked, it can be brought to a stop on the roadway.

I'm also going to give opinions with regard to the path of the vehicle that it followed as it went off the right side of the road. The vehicle follows a distance of about 300 feet. It's my opinion that given that path, that

the testing performed by the Americanos' experts show that the vehicle can be brought to a stop within around 400 feet.

I'm also going to talk about today that given the speed of the vehicle with a properly functioning brake system, that this vehicle can be brought to a stop even in the events that the driver decides to put in a huge amount of steering and cause the vehicle to go -- to go into a broadside

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slide in a left turn, that the Americanos testing shows that provided you had good, well-functioning brakes, that the vehicle would be brought to a stop in the middle of the road.

And I'm also going to talk about the roadside itself, the options that were available to Ms. Morado. You've got a paved shoulder, you've got a vehicle that is on a trajectory that is sending it towards the paved shoulder.

There were some other choices that were available to Ms. Morado. She could have decided to straighten her vehicle out, stay on the shoulder, bring it to a controlled stop and not reentered the roadway in a slide.

She also has the option to enter the grassy area, either partially or fully. My measurements of that scene indicate you've got an ample amount of room on the right-hand side once you even get beyond the pavement such that provided Ms. Morado straightens her vehicle out, does not try to reenter the roadway, she would be able to bring her vehicle to a stop in a controlled fashion, even if she was partially or fully in the grass area. She would not run into trees, she would not run into obstacles on the right side of the road.

I think in -- I think in short, that sort of summarizes a -- a lot. And probably a lot more than you wanted in your question. But there's a lot of subsets that go underneath those opinions, but I think that's the gist of it.

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Q. Okay. And I actually -- I've forgotten the question now, but I -- I think I was asking about -- and I appreciate you kind of giving me a summary of all your opinions.

I think what I was asking you was about what opinions you have with regards to the conduct of the driver and whether you thought it was reasonable or not, if you were going to give opinions about that and -- and to tell me about them. And so I think we kind of got off track a little bit, although you did talk about that at the end, right?

A. Uh-huh. Yeah, I -- I believe that -- I think I answered your question maybe with just a little too much information. But I -- I think I've given you everything that was responsive to the question.

Q. And more.

A. And more.

Q. Okay. I -- what I've done, you gave me a big folder of -- of correspondence. And I've tried to separate out -- and I'll let you look at it -- what appears to be subsequent to your first deposition and I've marked that as Exhibit 5. If you'll just take a look at that and see if I haven't left

anything in there that's from before September 21st. I mean, I should have only left in that folder what's before September 21st, and the stuff marked as Exhibit 5 should be after that date.

A. I think you've -- I think you've got it.

Q. Okay. Yeah, let's just keep it together like that. All right. Now I need your help in distinguishing which of these notebooks have to do with work that was performed or documents that were received after September 21st.

A. Oh.

Q. Can you help me with that?

A. Oh. That's going to be a little bit harder. I've got some of that -- I have some of that broken out, but I -- the file has gotten so big that I --

Q. It's --

A. -- I don't think I can give you every document that was produced after September 21st in a nice, concise package.

Q. Okay. Well, let's just go through them, then, and --

A. Sure.

Q. -- work on it. Okay. Let's start with this white notebook. If you can help me work on trying to identify what was either received by you or generated by your office after your first deposition on September 21st, 2011.

A. Okay. This is a -- a binder that pertains to five separate motorcoach units that have been looked at and studied by various people since the time of my deposition. So --

MR. HAYNES: Let me stop you for just a second and let's go off the record.

(Off the record from 9:53 to 9:54 a.m.)

MR. HAYNES: Okay. We're back on the record.

Q. (BY MR. HAYNES) And I understand, before we took a break, you were explaining that this notebook has to do with your inspection of different motorcoaches?

A. Right. Right. And so the -- the very first set of CDs are either photos or videos that were -- that I was provided and they are photos taken either by Kevan Granat or Dr. David Coates or Mr. Aaron Jones.

Q. Okay. I think we have these, so I'm not going to mark those.

A. Okay.

Q. Do you want to put those back?

A. Sure. That's a good idea.

Q. Otherwise, we'll have a big mess here.

A. And the first half pertains to documents that either I generated or were provided to me that are for the unit 6352, which is the bus crash that happened on the Pennsylvania Turnpike.

And so when you look in that first tab, what you see are some CDs that contain either my inspection of the motorcoach or my inspection of the crash site.

Q. Okay. Let's mark those. We may or may not have

them.
MS. DORMAN: We sent these all to you --
MR. HAYNES: Really?

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MS. DORMAN: -- to Tamara Wednesday evening, so -- but feel free.
MR. HAYNES: Yeah -- okay.
Q. (BY MR. HAYNES) What have I marked as Exhibit 6?
A. You've marked my CD of photos that say, roll I, Mt. Gretna crash site inspection, February 1st, 2012.
Q. And what is Exhibit 7?
A. This is my set of photos that say, roll D, E, F, G and H. This is my inspection of the Mt. Gretna bus in January of 2012.
Q. And for the record, the -- when you're talking about Mt. Gretna, you're talking about unit 6352?
A. Right. Right.
Q. What's next?
A. And actually, before I -- let me stop you there. That's actually my roll D, E, F, G and H are actually all of the units that I inspected, they're all going to be contained in this binder.
Q. Oh, in Exhibit 7?
A. Right. Roll E, for example, is unit 6352 here. Roll F is going to be unit 6934, which we'll been talking about shortly.
Q. Okay. Thanks for making that clear.
A. Okay. Next one. This is a CD that, I believe, contains news articles that I was provided or that I had found

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on the Internet that pertained to the Mt. Gretna bus crash.
Q. We'll mark that as Exhibit 8.
A. This is, I think, Aaron Jones' photographs of the -- the Mt. Gretna bus.
Q. I'm not going to mark that one if you want to put it back.
A. Sure. CD one of two and CD two of two.
Q. Okay.
A. This next document is a preliminary reconstruction diagram that I generated based on my inspection of the Mt. Gretna bus as well as the crash site.
Q. Let's mark that as Exhibit 9. What's next?
A. These are a few selective photographs of the caster latch mechanism that I had taken from either photos taken by Kevan Granat or Aaron Jones.
Q. And this is also from that same Pennsylvania bus accident?
A. Yes.
Q. All right. I'm going to mark those as Exhibit 10. And they're paperclipped and there are one, two -- eight photos, correct?
A. Correct.
Q. That will all be part of Exhibit 10.
Can you describe for us why you pulled those

specifically and what you think is significant about them --

A. Yes, I --
Q. -- in your opinions in this case?
A. Yes, I pulled them because I wanted to document the position of the caster latch mechanism in this particular unit.
Q. All right. And what is documented here?
A. What I had found, when I looked at these particular pictures, was that I had noted that the caster latch mechanism was in a forward setting or in a setting that would be in a setting for vehicles that are being driven in reverse.
Q. I'm going to take the paperclip off just so we can look at them easier.
Can you -- for a layperson, can you just pick out one or more of those photos in Exhibit 10 that specifically show what you're talking about?
A. Well, sure. I think all of them do show that. Let me zoom in on one of them here and that's sort of down in the middle of the stack. And you'll see here, this is the lead horn that's in the -- the caster latch mechanism. And you can see that the lead horn is now positioned forward of the hole that is in the plate, it's positioned forward of the wear tab. And what that does is it tells you that it's in a near for -- full forward -- or full forward position.
Q. So is this -- I'm having trouble orienting myself.
Is this taken from underneath, or on top?

A. It's taken from underneath. It's as if you're looking up -- as if you're laying on your back and you're looking up. This is the top of the latch arm assembly. This is a strap which we'll be talking about today. This is a tongue plate. And then this is the -- the caster ring horn that there's -- there's two horns that are on this upper end of the latch arm assembly.
And as they rotate fore and aft, this lead one will either be positioned in the hole, or will be positioned forward of the hole, depending upon the caster latch setting.
Q. And it's my understanding there's two holes, if you will, correct?
A. Correct.
Q. And in this picture that we're going to call 10B, are you saying that what we're looking at is the -- the caster -- what are you calling this?
A. The horn.
Q. -- caster horn is in the more forward hole for travel in reverse --
A. It's actually --
Q. -- or is it out of both holes?
A. It's out of the hole, right.
Q. So there's --
A. There's --
Q. Unlatched, I guess we could say?

A. Right. There's two --
Q. Or unlocked?
A. Right.
THE REPORTER: I'm sorry. What was -- would you repeat that?
Q. (BY MR. HAYNES) Unlatched or unlocked; is that fair?
A. That is fair. There's two horns, there's two holes. And as it gets positioned either fore or aft, the horn is either in the holes, or they're going to be moved forward relative to the holes. And what you're looking at is the most forward horn that is positioned forward of the hole that's in the plate.
Q. It's positioned forward of -- of both holes in the plate?
A. Yes.
Q. Okay. I just want to make sure we're --
A. Yes.
Q. -- understanding each other.
A. I think we are.
Q. All right. I'm understanding you. That's what I mean.
A. Do I put these back, then?
Q. Yes. Okay.
A. This is -- the next documents that are in my binder

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are eight pages of site inspection notes of the Mt. Gretna crash site that I performed on February 1st of 2012.
Q. Okay. I'm going to mark those as Exhibit 11. And I'm also going to re-paperclip these color photos we were talking about.
All right. And Exhibit 11 is eight pages, you said?
A. Yes, sir.
Q. Is this part of --
A. Uh-huh. Yes. Plus a cover sheet.
Q. Okay. Got you. We'll paperclip those pages together on Exhibit 11 as well. All right. And the cover sheet says February 11, 2012.
Is that when you performed your inspection?
A. February 1st of 2012.
Q. Sorry. February 1st of 2012. All right. What's next?
A. Next are a series of photographs that I took on the day of that inspection.
Q. All right. Let's go ahead and mark those as 12.
How many pages do we have?
A. Oh, well, a lot.
Q. Well, tell me which ones go together.
A. These pages right here are the ones that go together.

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Q. All right.
A. There you go.

Q. Thank you. Is there anything significant in these photos to your opinions regarding the Pennsylvania accident? I assume there is.
A. Yes. Yes. There's several things that are in there.
Q. Can you point them out for me and identify the pick of the photos that are part of Exhibit 12?
A. Sure.
Q. Okay, thanks.
A. I think that first off what you see is -- in these early pictures, you can see that the roadway has a straightaway and then it begins to curve to the right. I think that's important given the information I've been provided in that the police concluded that the driver was distracted and that's why he ultimately ran into the median barrier on the left side of the road.

Being distracted would certainly explain why he struck the wall on the left side given that the road is curving to the right and if you're distracted, then he wouldn't curve to the right and go right into the wall, which is consistent with the physical evidence on the vehicle.

The photo that I've got here labeled I4 shows a section of a wall. In my inspection of the crash site, there

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was a gentleman there from the highway department who had told me that this is the section of wall that was replaced by -- or after the crash because it was damaged in the crash when the motorcoach collided with the wall.

I think the next photo that I found useful was photo number 16. Photo 16 was a lone tire mark that was still present on the shoulder leading up to a large scar that was on the dirt embankment on the right-hand side and that you start to see that scar in -- in photo number 15.

And then I think anywhere from 17 on through 20 is a -- is my photos that show where the -- the motorcoach collided with the -- the embankment and then subsequently rolled up against the embankment depositing some debris and disturbing the earth. And all of that, I think, is useful to help me to explain what happened in this particular crash.

Skipping ahead to number 25 down through number 34 are photos that I took that show various types of debris from the bus along the embankment. We see glass and plastic pieces. That's what those photos document.

And look at photo number 46 is a -- a view from the -- up on top of the embankment looking down and you can see the -- the tire mark there that was on the shoulder that led up to the -- the embankment and impact. I don't know if you can see the green -- the green dashes there that are on the shoulder.

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Q. That's in photo 46?
A. Yes, sir.
Q. Okay.
A. 46 -- it's captured in 47 and 48 as well. And then

all of these other photos sort of document the condition of the roadway and artifacts that were present on the inside lane.

I -- at this time, I do not know if some of these marks and gouges that were present on the inside lane are or are not related to this crash. I am still awaiting some police information to confirm that.

And then there's a few more photos that are sort of close-up pictures of the embank -- excuse me -- of the median wall that's been repaired. They begin at item number -- or photo number 77, 78, go -- they go all the way down to looks like photo number 84 showing the new section of the median barrier.

And then just got a few photos that sort of show the various gouges and things that were on the roadway that I had said I wasn't sure if they are or not related. At this time, I'm still awaiting some police information. And they are photos 41 through 44.

Q. Okay. Thank you for that explanation.

What comes after Exhibit 12 in your notebook?

A. The next series of pages are 12 pages plus a cover

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page of the -- the bus inspection that I performed in Richmond, Virginia of the -- the Mt. Gretna bus.

Q. And that's -- that's unit number 6352?

A. Right.

Q. All right. And we're marking those pages as Exhibit 13.

And then is the next thing photos of the inspection?

A. Correct. Those are my pictures. And they are in this stack right here.

Q. We'll mark that as 14. I'm -- well, I'm -- I won't clip them yet.

Can you point out the photos in Exhibit 14 that -- well, first, what are -- let me ask you this first: What are your opinions regarding the Pennsylvania bus crash with respect to its similarity or not with the accident in this case?

A. It's my opinion that the Mt. Gretna bus crash is not substantially similar to the Campos bus crash.

Q. First tell me the ways in which you think it is not similar.

A. Well, I think in terms of --

Q. Do you want to look at your report?

A. That would be great. Because I've got them all itemized there. We might as well go through them --

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Q. Where would your report be?

A. It will be in that red binder.

Q. Okay. Here you go. We'll go ahead and mark your report while we've got it out as Exhibit 15.

Your supplemental report dated February 15, 2012, correct?

A. Correct.
Q. Okay. And you were about to tell me what your inspection and findings were regarding the Pennsylvania bus accident that show it is not similar -- the ways in which it is not similar to the accident in our case.
A. Right. Going to my report and looking at paragraph number six, the first bullet point, it says that the initial cause of the loss of control was driver distraction in the Pennsylvania crash. Versus in the Campos crash, it's clear that the loss of control was the -- the bus driver steering and braking in response to a mechanical failure.
Q. All right. How else did you find that the two accidents were not similar?
A. Okay. In the Pennsylvania crash, there's no physical evidence from the bus prior to the -- to the barrier impact. In the Pennsylvania crash, there were no driveshaft components or tire marks that were left on the roadway prior to the loss of control and the barrier collision.
In the Campos crash, the police found pieces of

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the driveshaft, universal joints prior to the loss of control and distinctive tire marks were created on the -- on the driveshaft on the end that was connected to -- on the -- on the -- excuse me -- on the driveshaft that was connected to the differential end.
Q. All right. Was there any other ways that you felt that the Pennsylvania accident and the accident in this case were not similar?
A. Yes. The -- in the Pennsylvania crash, it was clear that the driveshaft universal joint was torn apart because the tag axle was pushed laterally to the point where it had impacted or impinged and stopped the -- the rotating universal joint.
In the Campos crash, the universal joint failed due to improper maintenance and it was not an impact induced failure. In the Campos crash, the lateral movement of the tack axle was essentially negligible.
Q. Anything else?
A. Yes. In the Pennsylvania crash, the -- the bus's driveshaft did not have the circumferential scratches on the exterior of the driveshaft near the differential connection. The absence of those scratches indicates that the -- the driveshaft did not rotate a substantial amount prior to getting torn free from the bus.
In the Campos crash, the driveshaft had

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numerous scratches around the circumference. This was indicative of the driveshaft rotating for an extended period of time while it was in contact with that -- with that loop in the undercarriage.
Q. Is that it?
A. The -- in the Pennsylvania crash, the bus was caused to overturn due to impact forces from the bus slamming into the embankment front end leading. It's those impact forces

with the embankment that literally caused the bus to -- to enter into a -- a sudden clockwise rotation, which ultimately overcame the stability of the bus.

In the Campos crash, the bus was caused to overturn due to a combination of steering and braking forces which ultimately got the bus sliding sideways where it eventually furrowed in the earth and that's what caused the rollover.

So the Campos bus rollover was a steering and braking induced rollover, not an impact induced rollover like the Pennsylvania crash.

Q. Now, going back to Exhibit 14, which I think we previously identified as the photos of your inspection of the bus involved in the accident in Pennsylvania, correct?

A. Yes, sir.

Q. Can you show me the photos in Exhibit 14 that best support the opinions that you just read from your report?

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A. That the two crashes are different?

Q. Yes, sir.

A. Well, I guess in the -- and the long and the short of it is that all of them -- all of them show that.

Q. Well, let's try to pick, you know, three or four ones that you think are especially helpful to demonstrate the opinions that you were just reading to me.

A. Okay.

Q. I assume you're not going to show them all to the jury, so --

A. I'll try to pull out a few of them here today, but I -- you know, I think all of them are helpful in some respect. I don't know quite what I'll be using in front of the jury. Going to the --

Q. And I guess I'm more interested in the photos that have to do with the -- underneath the bus as opposed to the damage on the -- you know, on the outside. But pick whichever ones you're -- you think best -- are the best examples of the opinions that you were just reading to me.

A. Okay. All right. Going to the photos that show the -- the damage, first off, with regard to the impact because the impact is what sets up the lateral movement of the -- of the tag axle assembly.

And if you look at my photos that are numbered beginning with 25 -- 25 to 33, you see that it's a photo that

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shows the damage that's concentrated on the tag axle on the driver's side. And in particular, you'll see there's some -- a cap that has been broken, but more importantly, you've got some damage to the ends of the lugs that have been damaged from the contact with the -- the median wall.

It's a pretty big impact that's happening to this tag axle. It's the one that ultimately shifts the tag axle from the left to the right.

Q. And so that's -- that photo number -- did you say 25? I apologize.

A. Yeah, what I said was, I think if you begin by looking at photo 25 and get closer and closer down through photo number 33, that gives you an idea of what's going on with that particular component.
Q. All right. And that's the tag tire on the driver's side.
A. Yes, sir.
Q. Okay.
A. And there's a series of photos that have to do with the left front of the motorcoach. Those begin with photo 86 and get closer and closer to looking at the wheel itself and the -- the lug nuts that are -- and the lug studs that are on the left front. And you can see that there is abrasions and what look like residue, concrete residue in the ends of those lugs.

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Q. And this is, again, on the tag wheel on the driver's side?
A. This is actually on the steer tire on the left front of the -- of the bus.
Q. All right.
A. That's important to understand the interaction of the -- the two ends of the bus as it interacted with the wall. Because it's what sets up the large impact on the tag axle. It's the collision between the left front area of the bus that rotates and swings the tag axle into the median wall for the second impact. That's where you generate the large forces that ultimately shift the tag axle from left to right.
Q. Okay. What other photos are significant, in your opinion?
A. The next series of photos are the driveshaft that were -- that I took of the -- the driveshaft from the -- the Pennsylvania crash bus. And it's -- it's beginning at photo number 170 and it goes to photo -- looks like 176.
And what I found useful in that particular series of photos was the absence of a circumferential abrasion that's on the driveshaft. What it tells you is that the driveshaft didn't see a lot of rotation when it was uncoupled from the transmission.
It's a -- it's an artifact -- it's a piece of physical evidence that shows up on some of the other case

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study buses. In particular, it shows up on the Campos bus, but it's not present on this bus. That tells you that there's something different that happened about this particular failure.
Q. Well, what is the significance of having those marks?
A. The significance tells you that it failed and that there was a large amount of rotation between the driveshaft and the loop that was taking place. What this tells --
Q. Subsequent to the separation from the transmission end?
A. Correct. Correct. We see that in the Campos case.

We do not see that in this particular case.
Q. And what does that tell you?
A. What it tells you is that there isn't a lot of rotation that took place, it tells you that the failure mechanism, when it occurred, is different than the -- the -- the failure mechanism, when it occurs and the things that happen afterwards are different in this particular driveshaft and in this particular crash than they were in the Campos case.
Q. Okay. Aside from just being different, what do you think happened here?
A. What I think happened here is I think that that secondary impact -- the first one being with the wall and the

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left front, and then the secondary impact with the tag axle and the wall shifted the tag axle assembly laterally from left to right.

That housing literally ran into that driveshaft and it seized up that driveshaft and it fractured and it broke apart. And that's the failure mechanism for this particular case.

Once that happened, there wasn't a whole lot of rotation that took place once this driveshaft -- or once the crash finally ended. There wasn't a lot of interaction between this driveshaft and the loop that's on the undercarriage.

Q. On the differential end?
A. Yes, sir.
Q. Why do you think there wasn't a lot of rotation after this driveshaft separated at the transmission end?
A. It's the absence of the abrasions from the loop.
Q. Well, the absence of the abrasions are what tell us that there wasn't a lot of rotation, right?
A. Right.
Q. The -- my question is, why do you believe there wasn't a lot of rotation after the transmission separated -- after the driveshaft separated at the transmission end?
A. Because I don't see a lot of abrasions on the exterior of that shaft.

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Q. I guess I'm not being clear. I understand that you're saying the absence of the evidence of the abrasions tells you there wasn't a lot of rotation after separation at the transmission end.
A. Uh-huh.
Q. My question is, why do you believe that the driveshaft did not continue to rotate and cause those abrasions after it separated at the transmission end?
A. Well, I think what we see is that we see the absence of the abrasions themselves, I think, tells you that.
Q. I'm not disputing whether it did continue to rotate, I'm asking you why it didn't.
A. Why it didn't continue to rotate?
Q. Right.

A. Well, there's either -- either this piece is -- is stopping its rotation and if it's still connected to the transmission, then the only thing that can do that would be to have the drive axle stop rotating. And I don't have enough information on that to tell you that one way or the other.
Q. Okay. Keep going.
A. This is a series of pictures now we begin to just sort of look at the amount of lateral displacement of the tag axle assembly itself.
So what you're looking at is the -- the tag axle assembly, it begins in photo number 177. You're looking

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towards the rear of the bus and you're looking here on the -- the left rear tire of the tag axle.
And I'm just trying to illustrate the amount of lateral displacement by showing the comparison between various components on the driver's side versus various components on the passenger side.
Q. And would you identify the numbers for these photos, just for the record?
A. Yes, they begin in 177 and go all the way through 198.
Q. What's the difference between the lateral force that you -- that was in -- that was imparted to the tie rod in the Pennsylvania accident and the lateral force that has been opined by several experts that was imparted to the tie rod in the -- in our accident when the motorcoach left the roadway?
Does that make sense?
A. No, I'm having trouble with that question. I'm sorry.
Q. Well, if I understand right, you're saying the -- the tie rod was bent in the Pennsylvania accident because of the lateral force of the motorcoach hitting the median barrier; is that correct?
A. That's not correct.
Q. Okay. Explain it to me.
A. Actually, what I'm talking about is the actual tag

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axle assembly itself. I'm talking about the shift of that entire axle assembly happens in the impact with the wall.
Q. But that's -- but you're saying that that all shifted and the tie rod bent because of that impact with the median wall?
A. No, I -- I think that what's -- you're -- you're going to have this lateral shifting that's going to take place and that's going to seize up that universal joint. And it's going to just fracture and tear apart because it gets stopped because of the movement of the housing as it moves laterally, literally stops that universal joint from rotating. And then it just keeps -- there's enough torque there where it just tears apart.
And once that happens, then there's some interaction that's taking place with the -- the tag axle -- or I'm sorry -- with the -- the driveshaft and the tie rod and

the plates and that's where we're seeing the residuals of that.

Q. So let me ask you hopefully a better question.

In the Pennsylvania accident, what caused the bending of the tie rod that is seen in the photograph 177?

A. Well, I'd expect that there's some of that damage is going to be created from the lateral movement of the tag axle assembly itself. And then some of that damage is going to be created because of the driveshaft struck it as it was flailing

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around inside the -- the -- under the undercarriage.

Q. Can you distinguish what bending was caused by the lateral movement or the lateral forces imparted to the bus by hitting the median wall versus what bending of the tie rod was caused by the driveshaft hitting it after it separated at the transmission end?

A. No.

Q. But it's your opinion that some of the bending was caused by the lateral forces generated by the motorcoach hitting the median wall on the -- on the motorcoach's left side, right?

A. Correct.

Q. And it's also your opinion that some of the bending of the tie rod was caused by the driveshaft hitting it after it separated at the transmission end?

A. Yes, sir.

Q. What else is significant about these photographs?

A. I think you can see the lateral displacement of the axle itself relative to some of the fixed components, for instance, if you look at the top of the left rear wheel.

Q. That's in 179?

A. Photo 179, right. And you compare that to the distance in the -- in the components for -- that are shown in photo number 191 which is of the right rear tag axle tire.

Q. And tell me again in your opinion, what caused the

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tag axle to unlock in this accident?

A. What caused the tag axle to unlock. The tax axle unlocks, it appears, from the driveshaft striking it.

Q. What else do these photos show?

A. Then you've got the -- a few photos that show the caster latch mechanism which are shown in photos 196, 197. Got a few more photos that show the --

Q. Will you show me those again? I'm sorry.

A. Yes, 196 and 197.

Q. Okay. Sorry to stop you.

A. And there's a few photos that show the -- the tie rod and the connection down at the transmission end and the loop, all of which are contained in photos 198 to 210.

Q. In the Pennsylvania accident, do you have an opinion whether the driveshaft, after it separated at the transmission end, for lack of a better word, escaped the harness or horse collar before striking the tie rod and tag axle, or was it still contained within the harness or horse collar when it

struck the tag axle and the tie rod?
MS. DORMAN: Object to form.
Q. (BY MR. HAYNES) Do you understand my question?
A. No, I didn't. I'm sorry.
Q. The -- it's my understanding that -- that you told me that in the Pennsylvania accident, after the driveshaft separated at the transmission end, it struck the tag axle and

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unlocked it and it also struck the tie rod and that was, at least in part, the reason for it being bent.
And so my question is, after it's -- the driveshaft separated at the transmission end, do you have an opinion whether it was able to strike the tie rod and the tag axle without escaping the harness at the differential end, or did it escape the harness and then hit those two items, if you have an opinion?
MS. DORMAN: Object to form.
A. The -- it -- it -- there are contact marks which indicates that the driveshaft was contacting the tag axle assembly inside the pass through. That's -- so to answer your question, yes, there is contact there. And then there is contact that appears that the driveshaft has struck the -- the tie rod and the latching mechanism for the -- the tie rod. That happens as well.
Q. (BY MR. HAYNES) Okay. I'm -- maybe I'm misunderstanding you.
There is a harness, if I -- or horse collar at the differential end for the driveshaft, correct?
A. Yes, sir.
Q. And my question is, did the -- after the driveshaft separated at the transmission end, did it strike the tag axle with or -- after escaping that harness or without escaping that harness, was it still able to strike the tag axle?

0043

MS. DORMAN: Object to form.
A. I guess I don't know the answer to that.
Q. (BY MR. HAYNES) Okay. That was my question, whether you had an opinion about it.
A. I don't.
Q. And do you have an opinion whether, after the driveshaft separated at the transmission end, if it was able to strike and -- the tie rod after escaping from that harness at the differential end or while it was still within the harness?
A. Again, I --
MS. DORMAN: Object to form.
A. -- I don't have enough information to be able to answer that.
Q. (BY MR. HAYNES) Okay. Thanks. I just wanted to know if you had an opinion.
Anything else in these photos?
MS. DORMAN: Object to form.
Q. (BY MR. HAYNES) Anything else in these photos that you think are significant to your opinions about the

Pennsylvania bus accident?
A. Yeah, I think that --
Q. As it relates to our accident.
A. -- again, looking at the photos that begin at 220 and go to 222, it shows just some of the undercarriage

0044

components that have been deformed or displaced because of the lateral shifting of that tag axle assembly.
Q. And if -- again, if I'm understanding you right -- and correct me if I'm not -- the lateral shifting of the tag axle assembly was caused by -- you believe was caused by the impact with the median barrier wall?
A. Correct.
Q. I think what I asked you earlier -- and maybe we got off -- off of it was, do you believe in the -- in our accident, in this case, that there was any significant lateral forces imparted to the tag axle assembly or tag axle system including the tie rod when the motorcoach in question entered the median up until the point that it rolled over?
A. There are lateral forces that are being imparted to the -- to the motorcoach in the Campos crash, sure. I mean, there's lateral forces throughout this event. I'm not quite sure if -- if you're looking for something more than that.
Q. Well, I just -- that was my initial question.
How did the lateral forces in the -- in our accident, in your mind, compare to the lateral forces in the Pennsylvania accident?
A. The lateral forces in the Pennsylvania accident are orders of magnitude greater than what we see in the Campos crash.
Q. What does orders of magnitude mean?

0045

A. Well, I can't quantify it any more than that, other than just look at the physical evidence, you don't see any lateral shifting of this magnitude in the Campos bus crash or the subject bus. There's nothing even close to this, both either in direct contact or in indirect induced damage. There's nothing of that magnitude in the way you look and see in these photos that show the lateral shifting in the Pennsylvania crash.
Q. Have you attempted to measure the forces -- lateral forces generated in the impact in the Pennsylvania crash?
A. I have not.
Q. Is that something that you've been asked to do?
A. I have not.
Q. Is that something that you've offered to do?
A. I have not.
Q. Have you attempted to measure the lateral forces generated on the tag axle assembly and system in the -- in our case?
A. Yes, in my speed calculations that I discussed in my first deposition, I've got some lateral force values, drag force values that I used in my speed calculations.
Q. I'm not sure I'm following you. Can you explain?

A. Yeah. For instance, I'll just use the -- in the example where it's furrowing, where the vehicle was furrowing in the median in the subject crash, I had drag factors that I

0046

utilized for the furrowing phase. Those drag factors were being applied in some portion in that phase in a lateral sense. Ultimately, they get applied in the longitudinal sense as the -- the passenger side tag axle gets displaced from rear to front.

Q. Okay. So you're telling me that the -- you did measure the -- the lateral forces on the tag axle assembly and tie rod in the -- in our accident?

A. Yes, for the speed calculations that I needed, I had to come up with some drag factors that would be applied primarily in the lateral direction. I think we've got some of those values that can be seen at my speed calculations, you bet.

Q. Okay. I guess what I'm -- maybe I need to ask it this way: If Ms. Dorman said, you know, Mr. Rucoba, I really want you to tell me what the amount of the lateral force exerted on the tag axle assembly and tie rod in -- in our accident was, is that the way you would do it, or would you do something else?

A. No, I think I would take what I've done. I'd take -- take the speed calculations and you can look at the speed calculations and you can figure out where I've got the speed at the -- of the vehicle along the various sequences in the crash.

And if you know where the speed -- what the

0047

speed is and you know the radius of the path, which is all defined in the drawings that I provided, sure, you can calculate the lateral forces that are being imparted to the tag axle throughout the crash.

Q. I guess -- my question, though, is not whether you could do it that way.

Is that the way you would go about answering her question and giving her that information, or would there be other ways to do it?

A. Yes, with regard to the Campos crash, that's what I would do. That would be one -- that would be the method I would recommend if you're trying to figure out what kind of lateral forces are being imparted to the tag axle in the Campos case. That would not be the method that I would adopt for this Pennsylvania crash.

Q. Why is that?

A. They're two different types of -- of forces that are being applied in -- in two different manners. We've got an impact force versus forces generated by just normal or -- or braking and steering tire forces. We've got impact forces versus tire forces. They're completely different.

They're both generating lateral forces. Both buses see lateral forces. One is being generated through tire friction interaction, the other is being generated through an

axle assembly slamming into a concrete median wall.

Q. Maybe I've been misunderstanding and -- it's very likely. But what I understood that Mr. Granat has been telling us is that the tie rod in the -- in our accident was bent because of the lateral forces imparted on the -- underneath the bus as a result of the motorcoach going into the median and the furrowing into the ground.

A. Yes. Right.

Q. Okay. So why are you talking about on the roadway?

A. But it -- but it's -- well, you had asked me if I could calculate the lateral forces on this vehicle.

Q. Well, maybe we're talking across purposes.

A. Well --

Q. I was trying to find out from you how you would calculate the force generated by -- the lateral force generated on this tag axle assembly and tie rod as a result of Mr. Granat's theory that, you know, there was force generated longitudinally when the bus went into the median and dug into the ground.

A. Right. Right. And that's what I was saying. I think earlier, when we were looking at the small phase of the crash where the vehicle was furrowing, my speed calculations have drag factors that are being applied to the bus as it's furrowing in the dirt. Then they are both lateral.

But because of the spinning nature of the bus, those forces ultimately turn into a longitudinal direction.

But drag is still drag. Furrowing is still furrowing. If you're furrowing -- if you're furrowing sideways or if you're furrowing with the rear end leading, as long as you're furrowing and sliding, the drag factor will be the same. So those are values that are in my speed calculations.

I think the way that -- that you would then look at that would be to do the things that Mr. Granat did, which is put a vehicle into a fixture and then quantify the force.

Q. Okay. So if I'm understanding you right, you're saying that if you had been asked to quantify the -- the forces generated on the tag axle assembly and tie rod in our accident, the way you would have done it would just be what you've already done in this case, which is use a drag factor?

A. Yes. You could do that. Sure. You could do that.

Q. And I guess I'm getting hung up when you keep saying, well, yeah, that's one way to do it or you can do it that way because it makes me think there's other ways you could do it.

A. And that's why I said there is another way that you could do it and you could --

Q. What is the other way?

A. -- do it like Mr. Granat did, put it in a fixture, test it, load it up to a force. But just --

Q. That would -- that would tell you what the force

generated -- force necessary to bend the tie rod, but that doesn't tell you the force generated in the accident.
A. You could compare that force to the force from the calculations.
Q. And have you done that?
A. I haven't. I think Mr. Granat has, though.
Q. Okay.
A. But, again, that's not how you would do that for this case, for the Mt. Gretna crash.
Q. How would you do it in this case -- in the Mt. Gretna crash?
A. Well, like I said, it's -- it's -- now it's orders of magnitude. I think that the -- what you would have to do is literally put a bus in a fixture and apply a lateral force to the assembly through the use of some sort of pneumatic device and load it up laterally until you got deformation that matched the undercarriage deformation that we see here.
And I -- and -- and I can tell you that that would be orders of magnitude greater than what we see in our Campos crash.
Q. I guess I don't understand why -- why would that not be the way to do it in -- in this case, the Campos crash as well?
A. I think it -- that Mr. Granat did do it. Mr. Granat did do that. He put that in a fixture and he did calculate

0051

those forces or quantify those forces.
Q. So that would be a way to do it and then you're saying do it that way and compare it to your numbers for the drag factor?
A. Sure. Sure. You don't have that luxury in this particular case in the -- in the Pennsylvania crash because it's not forces that are generated through tire forces.
Q. Any other photos that are significant for the Pennsylvania bus accident?
A. Yes. The -- the next series of photos are photos that were taken from the either news sources or Internet articles that show the bus at its point of rest. I used these -- these pictures to help me locate the approximate point of rest at the time of my scene inspection.
It helped me to understand the motion of the bus as it collided with the embankment and then spun and slid to its point of rest. Something that was different than the Campos case in that this was an impact induced rollover versus Campos, which is a braking and steering induced rollover.
There's an outside maintenance purchase order entry --
Q. Let's -- we're finished with the photos, then, that I guess we've marked as Exhibit 14, correct?
A. Yes.
Q. Okay. What's next in this notebook?

0052

A. This was a document that was sent to me, it's the outside maintenance purchase order entry. Just gave me some

information about the bus.
Q. All right. We'll mark that as 16.
A. This was a -- a statement of the bus driver that was given to me.
Q. Seventeen.
A. Next are a series of documents that were generated by the Commonwealth of Pennsylvania Police Department.
Q. Okay. We'll mark those as 18.
A. The next are a series of documents that were taken from the Internet or documents that were sent to me having to do with the bus crash.
Q. All right. We'll mark those as 19, Exhibit 19. Okay. Are we through with the Pennsylvania accident?
A. Yes, sir.
MS. DORMAN: Do you want to take a break?
MR. HAYNES: Yes.
(Off the record from 10:56 to 11:06 a.m.)
Q. (BY MR. HAYNES) Mr. Rucoba, we're back on the record after a short break.
What are the next items in the white notebook that we've been going through?
A. This is information pertaining to unit 6934.
Q. All right. And that's -- what is unit 6934?

0053

A. I understand that that was a -- a 2000 MCI model 102DL3 that had been recently refurbished, but there was a -- a -- a driveshaft on this particular unit that had failed and was cited as a substantial similarity type issue that had come up.
Q. Okay. And without making you read from your report again, are the reasons that you think that the incident involving unit 6934 not being substantially similar to the accident in our case set out in your report?
A. Yes, sir.
Q. Okay. So let's, instead, focus on the actual documents in your white notebook related to unit 6934.
Can you identify what those are, please?
A. Sure. The first is a CD of Aaron Jones' photographs.
Q. Okay. We're not going mark that.
A. Okay. Next are a few selective pictures that I have enlarged of the -- the caster latch mechanism and they're photos that were either taken by myself or Mr. Granat.
Q. Okay. I'm going to mark those as Exhibit 20 and -- okay. And you just paperclipped them as well?
A. Right. Yes, sir.
Q. Can you just briefly explain what the significance of those photos are and your opinions?
A. Yes. This -- these photos just illustrate the

0054

position of the -- the caster latch mechanism at the time of our inspection and you can see that it is in its proper position for forward travel.
Q. It's -- in other words, it's latched in the second

slot -- or would you call that the first slot?
A. I -- I would call it the forward slot.
Q. Okay. That's easy.
A. Yeah.
Q. Okay. And then the -- in front of the forward slot would be the slot for reverse travel?
A. Yes, sir.
Q. Okay. And it's -- can we see both slots so we can see which one it's latched in?
A. Not in this particular picture. You only see this -- well, you see that this slot is here, and then this has got to be the loading slot given that we're pretty much near the end of a plate. So there -- there cannot be another slot in front. There can only be that.
It's also important to note that the presence of that -- that strap that's there in this particular model as well. I don't think I mentioned that in the -- in the Pennsylvania bus crash that the strap was present. It's something that we will talk about later today, but it's --
Q. It's shown in the photos?
A. Yes, it's shown in the photos.

0055

Q. Okay. So in the first photo that's actually got the sticker for Exhibit 20, the caster latch is in the slot closest to the latch strap?
A. Yes, sir.
Q. Okay.
A. Uh-huh.
Q. All right. What else?
A. That's the purpose of those photos, just to show its position. And I'd taken various pictures and enlarged them. Also shows some damage that was present on the -- the latch arm assembly.
Q. Okay. And what's the significance of the -- finding the caster latch in the position for forward travel?
A. Well, at least at the time of my inspection, I could see that it was in its proper position. That was one of the issues that's now come up in this particular case is that they -- the Campos crash has a latch that is mispositioned, so I was just documenting the condition of that latch.
Q. How is the -- what was the position of the caster latch in -- when you inspected the motorcoach in our case?
A. It was mispositioned. It was in a --
Q. Can you be more specific?
A. Sure. It was in a forward position, which would mean it was in a position that was designed for rearward travel.

0056

Q. Was -- to the best of your recollection, was it actually latched in the position for rearward travel, or was it unlatched in either the forward or -- forward or reverse position?
A. As I recall, I think it's in an intermediate position. It's not quite full -- fully latched for rearward

travel.
Q. That was the position -- that was the position you saw it in when you inspected the -- the bus in our accident?
A. Yes, sir.
Q. All right. What's next in your notebook?
A. These are notes that I made at the time of my inspection of unit 6934. There's eight pages plus a cover page.
Q. And we're marking that Exhibit 21.
A. All right.
Q. What's next?
A. These are photos that I made at the time of my inspection of unit 6934.
Q. We'll mark those Exhibit 22.
And what photos in that group are significant to your opinions regarding the two incidents?
A. Well, the photos, I think, that begin with photo 006 just show the parts that were taken off the vehicle and were just sitting inside or were found inside the vehicle at the

0057

time of the inspection. They had already been removed from the vehicle prior to my inspection. Those parts are labeled -- or those parts are on photos six through 12.
And we have another series of photos that show the tie rod. And those pictures are 15 through 22.
Q. Is the tie rod bent?
A. Yes, sir. Yes, it is.
Q. All right. What else?
A. And then there's some undercarriage pictures which show that the bus had been refurbished and there were new -- new parts that were added to it and I documented those as I could see them and those are in photos 23 through 32.
Q. Any tag axle related -- tag axle assembly related parts?
A. No.
Q. Okay.
A. They were all -- looked like they had all been replaced.
Q. That's what I'm asking. Had any of the tag axle assembly type parts been refurbished or replaced?
A. Yes. It looks like the -- the locking plates had been replaced, it looked like the -- the plate that's attached to the tie rod, the tie rod assembly itself had been replaced. Those look like all the new parts to me.
Q. All right. Anything else?

0058

A. Let's see here. Beginning with photo number 35 through --
Q. Let me ask you this before you go on.
Do you know who supplied the new parts, who manufactured them?
A. I don't.
Q. Okay. Go on.
A. Photo number 35 through 43 just are a series of

pictures that I took that show the damage that was still present around the -- the tag axle pass through.

And then I've got a few photos that were of the exterior of the vehicle, which are photos number 45 through 47, which were helpful to me to illustrate that this particular bus was not involved in any kind of a crash.

Q. Do you have an opinion whether the incident involving unit 6934 -- is that correct, is that what we're talking about?

A. Right.

Q. Do you have an opinion whether the incident involving unit 6934 involved a driveshaft failure?

A. Yes. According to the records, it says here, the driveshaft came out, driveshaft missing.

Q. Do you know whether the driveshaft separated on either the transmission end or differential end --

A. I don't.

0059

Q. -- first?

A. I don't.

Q. Do you have an opinion on what caused the tag axle to unlock in this incident?

A. I don't.

Q. Do you have an opinion about what caused the damage and bend to the tie rod that you were showing me in one of the earlier pictures as a result of this incident?

A. As best I can tell, it looks like it saw a direct blow.

Q. Do you know what hit it?

A. I think a potential source would be the driveshaft.

Q. Do you have an opinion whether the driveshaft escaped the harness or horse collar at the differential end before striking the tie rod?

A. I don't.

Q. All right. And you don't have an opinion about whether the driveshaft struck the tag axle and unlocked it?

A. Correct.

Q. Do you have an opinion whether the driveshaft struck the tag axle assembly?

A. Well, it looks like something struck the locking plates.

Q. Well, what are other options for what could have struck it?

0060

A. I think I need to know more about this bus and I don't have enough information.

Q. Those photos that we were looking at, were those photos that you took yourself, or someone sent you?

A. These photos?

Q. Yes, sir.

A. Those are my photos.

Q. Okay. So you did inspect it.

What other information -- you did inspect it, correct?

A. I did.
Q. What other information would you need to come up with opinions to answer the questions I was just asking you?
A. I think I'd like to have seen the -- these units before everything got removed and everything got refurbished. In other words, I would have liked to have seen this in its damaged state, including looking at just parts.
Q. What's next in your notebook?
A. Next in my notebook is -- are some documents that were provided to me that pertain to unit 6934 -- one, two, three -- there we go -- that would be this stack of documents right here.
Q. All right. Is there anything that you took from that stack of documents that is significant to your opinions or inability to form opinions about unit 6934?

0061

A. Yes. I had noted that in a section called problem description comments, someone had said that the driveshaft came out, driveshaft missing, broke yoke, bent tag, tie rod, broke tag lock.
Q. Do you have an opinion regarding unit 6934, whether the driveshaft separated at the transmission end first?
A. I don't.
Q. Did you -- do you have an opinion about whether, after driveshaft separation, if it continued to rotate in that horse collar for any period of time?
A. It has some marks inside that tag axle pass through which are indicative of a rotating driveshaft.
Q. So would that tend to tell you that the driveshaft separated at the transmission end first?
A. Yes, that would be a clue. I would like to have seen these parts before it got refurbished, though.
Q. Anything else -- any other information or documentation about unit 6934?
A. Just the fact that it wasn't involved in a crash and that we do have this driveshaft that came out, according to these documents, and yet it didn't result in a -- in a crash. And so I think that is significant.
Now we're into unit 6468 -- is that --
Q. That's -- okay.
A. -- is that the next section?

0062

Q. That's the next section in your notebook, so let's do that one next.
A. Okay.
Q. When did you inspect this motorcoach?
A. January 25th of 2012.
Q. All right. Tell me what documentation is in your notebook regarding this inspection.
A. The first section are a series of CDs. This is a series of photos taken by Aaron Jones. This is a series of photos taken by Dr. David Coates. And this is a series of photos that were taken by me of the driveshaft that I inspected here March 2nd of 2012.

Q. I think I have that. Yeah.
Those are the draft shaft that -- inspection photos from our case?
A. Right.
Q. All right, sir. Okay. I'm not going to mark --
A. By our accident, you're referring to the --
Q. Campos.
A. No. No. These are the driveshaft inspection photos taken of unit 6468.
Q. Okay. Let me double-check. Yeah. Okay. All right. So I have all of those.
A. Okay.
Q. Let's -- what's next in here? I'm not going to mark

0063

those.
A. This is a series of pictures that I took of the caster latch mechanism, I enlarged. And they're photos that are taken either by me, by Dr. Coates or by Mr. Granat or Mr. Jones.
Q. Okay. And what's significant about those photos?
A. Those document the position of the caster latch mechanism that it was in its -- it was properly positioned for forward travel.
Q. Let me ask you, going back to the photos that I didn't mark regarding your inspection of the driveshaft for unit 6468.
Do you have those printed out somewhere in the notebook? Are we going to get to those?
A. Yes.
Q. Okay. All right. When we get to those, we'll talk about it.
So with regards to Exhibit 24, was there anything else significant about your inspection of unit 6468, other than the location of the caster latch?
A. It just had some of the markings that could be seen in the -- the tag axle pass through, which indicated that there was a -- a number of different contacts being made by the driveshaft.
Q. All right. And what about those contact marks are

0064

either similar or dissimilar to our accident?
A. There is a -- a lot more of those marks. They're in a similar area, but there's a lot more of the marks.
Q. What does that tell you?
A. Just a lot more contact, a lot more damage, lot more interaction with the -- the tag axle pass through, the tag axle assembly.
Q. Is that significant for any reason to you?
A. If this is the -- the position that the -- the caster latch mechanism was -- was found after this failure happened, it tells you that on going through significant impact doesn't affect the caster latch mechanism.
Q. Anything else in the photos marked as Exhibit 24?
A. No.

Q. What's next?
A. This is a two-page series of notes that I made at the time of my inspection of the -- the driveshaft for unit 6468.
Q. We'll mark those as Exhibit 25.
What's next?
A. Next are a series of photos that I took at the time of that inspection.
Q. And we'll mark those photos as Exhibit 26.
What's significant about those photos?
A. When I looked at this driveshaft, I had noted that

0065

there were the circumferential abrasions that were down on the outer tube of the -- the driveshaft near the differential coupling which were similar to the same kind of abrasions that -- that were on the -- the subject driveshaft, meaning that this one is rotating around and leaving these abrasions. Something that was absent in the Mt. Gretna driveshaft, for instance.
Q. So the -- if I'm understanding you right, this indicates to you that the driveshaft separated first on the transmission end and then continued to rotate for some period of time and that's what left the marks that we're looking at in these photos?
A. Yes, sir.
Q. As it rotated within the harness?
A. Yes, sir.
Q. Okay.
A. And noted the ears that were broken off on the -- on this one -- on this particular driveshaft for 6468, just documented their condition and what they looked like in comparison to the -- to the Campos one.
Q. How are -- how was that similar or different from Campos?
MR. HAYNES: Justin, are you still awake?
MS. DORMAN: He got dropped again. So he just e-mailed me and --

0066

MR. HAYNES: Waiting for him to call back? I don't think he's going to call back.
MS. DORMAN: He may not.
Q. (BY MR. HAYNES) Go ahead.
A. There is -- more of the ears fractured off in the unit 6468 driveshaft than there are in the Campos bus crash.
Q. Which end are we looking at?
A. We're both looking at the end that is for the -- the -- the U-joint at the transmission. And you're looking at the ends of the driveshaft that have the -- the two ears fractured off. In 6468, you've got them basically fractured off halfway across both of them.
In the Campos driveshaft, you've got just one of the ears fractured in the halfway point. The other one is still intact, although there is a crack in there.
Q. Other than the fact that it's different, what is the

significance of that difference?
A. It was just documenting the difference between them. That was it.
Q. Okay. But in your mind, there's no significance attached to that difference?
A. No, sir.
Q. Okay. Let's keep going.
A. The next is my inspection notes that I made at the time of my -- my inspection of unit 6468.

0067

Q. Mark those as Exhibit 27.
What's next?
A. Next are a series of documents that were provided to me that have to do with unit 6468 and some maintenance information, some driver inspection sheets.
Q. Okay. And we'll mark those as Exhibit 28.
Is there anything about the -- is there anything significant in the information that we've marked as exhibit -- or documents that we've marked as Exhibit 28?
A. There isn't any information about the driveshaft failure, any information about how this thing failed, why this thing failed. It -- the only thing that I saw in any of these documents indicated that the -- there was a second drive line loop installed and that was it.
Q. When it was refurbished, you mean?
A. Right. Right. But I also find it significant in that this bus was not involved in a crash.
Q. Okay. You told me that earlier.
A. Okay.
Q. Okay. What's next?
A. Next is a series of photos that I took at the time of my inspection of unit 6468.
Q. Okay. We'll mark those as Exhibit 29.
Can you point out to me anything that you think is significant that's contained in those photos to your

0068

opinions regarding what you found with respect to unit 6468 or how it compares to the Campos accident?
A. Yes. The first series of photos which begin with number two and go through number nine sort of document the exterior of the vehicle and the absence of any -- any damage to the vehicle.
The -- the next series of pictures begin with photo ten and go through photo 38 are a series of pictures of the undercarriage sort of documenting the damage that was present in the undercarriage, the -- at that time, the driveshaft was missing, so we didn't -- did not have that available to photograph.
The position of the caster latch mechanism, the amount of damage in the tag axle pass through, some of the -- the refurbished items that had been put on the vehicle prior to -- to my inspection. The position of the caster latch mechanism, which we talked about earlier, is also contained in that series of photos.

Q. All right. Do you have an opinion whether the driveshaft contacted the tag axle and unlocked it in this incident?
A. No, I've got no opinion on that.
Q. Do you have an opinion whether the driveshaft impacted the tie rod and bent it?
MS. DORMAN: Object to form.

0069

MR. HAYNES: We thought you were gone for the weekend.
MR. HILL: No, I keep getting dropped calls.
MR. HAYNES: It's Melissa's fault. She keeps punching the off button.
MS. DORMAN: I do not.
MR. HAYNES: Just to see if you'll call back.
MR. HILL: Are y'all on a break?
MS. DORMAN: No, we've been going.
MR. HAYNES: No, we're actually in the depo. Mr. Rucoba is thinking, so we're talking.
MR. HILL: I'm muting.
A. I did want -- I do want to go back to a previous question you just asked me about if there was any contact in that -- yes, in looking at my pictures and seeing that there was some contact.
Q. (BY MR. HAYNES) Which photo are you looking at in particular?
A. I'm looking at photo number 22. It looks like there is some contact on one of the locking plates.
Q. For the -- the tag lock?
A. Yes.
Q. Do you have an opinion whether the -- besides the contact, do you have an opinion whether the tag axle was unlocked as a result of being struck by the driveshaft in the

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incident involving unit 6468?
A. At the time of my inspection, this unit was not unlocked.
Q. All right. What about the tie rod, do you have an opinion whether it was struck by the driveshaft in this incident involving unit 6468?
A. It did not appear that there was any damage to the tie rod. It looked like it was straight.
Q. All right. And so what you were showing me earlier was that there were marks around the caster latch mechanism?
A. Yes, sir.
Q. And you believe those were caused by the driveshaft, correct?
A. What I said was there's marks around the tag axle pass through and near the -- near the top of the tag axle assembly and the tag axle pass through, which is directly underneath the caster latch mechanism and there's contact marks there.
Q. Do you have an opinion whether any of the marks in that area or to the tag axle that we've been looking at in

Exhibit 29 were caused by the driveshaft after it escaped the harness on the differential end, or whether it was still contained within the harness on the differential end when it -- and made those marks?

A. I don't know about whether it had gotten free from

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the -- the harness on the differential end, but it's clear that it's still contained within the tag axle pass through when it's making these kinds of marks.

Q. What about the marks to the -- the tag axle that you were showing me earlier?

A. What -- what about them?

Q. Well, was it -- is it your opinion that the driveshaft was still contained within the harness on the differential end when it made those marks?

A. I don't know.

Q. Okay. And how do the marks on the tag axle that we're looking at in photograph 22 -- is that right? Is that photograph 22?

A. Yes, sir.

Q. How -- how do those compare to the marks on the tag axle in the Campos accident?

A. The -- the upper and lower locking plates in the Campos crash have -- have more damage to them than what I see in the unit 6468 locking plates.

Q. Do you have an opinion as to what caused the damage to the -- that you're looking at to the tag axle locking plates in the Campos accident?

A. In the -- oh, in the Campos case?

Q. Yes, sir.

A. I think it's likely to be the -- the driveshaft.

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Q. All right. What -- what else do you have in your notebook, what's next? Or have we finished with your comments about the photographs in the --

A. Yes, I have. Uh-huh.

Q. -- in Exhibit 29. Okay.

What's next?

A. The next is information pertaining to unit 60628.

Q. And what unit is that, just for identification purposes?

A. It's a unit that was used in -- in several tests that was -- that were conducted by the Americanos experts.

Q. Is that the unit that was used for the testing regarding driveshaft separation?

A. Right.

Q. Okay.

A. What I call the orange painted unit.

Q. Okay. That's a good way to identify it. Okay.

First, what are the disks?

A. The first one is a driveshaft testing, additional camera and pedal views. These are videos that were provided by the Americanos experts, videos made during this test.

Q. Right. Okay. I'm not going to mark those.

A. This is a video that was provided -- it was created, I guess, by Aaron Jones. It's a driveshaft testing video.
Q. Okay. Next we have some photos?

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A. Yes. This is a series of pictures that I selected that were taken by various people that showed the caster latch mechanism as -- as found in the various inspections.
Q. Okay. I'm going to mark those as Exhibit 30. All right. What is significant about the -- to your opinions about the photos contained in Exhibit 30 involving unit 60628?
A. These first series of pictures show the -- the caster latch mechanism in a forward position, so it's mispositioned if you were driving in a forward direction. It's -- you can see we've got the -- the horn, the lead horn is forward of the hole, it's forward of the -- the plate itself. You can also see what's present is the -- the strap.
Q. So it's completely unlocked or unlatched?
A. Correct.
Q. It's not in either the position for forward or reverse travel; is that correct?
A. It's -- it would be in a position for reverse travel. This is -- you would -- this is the way it would look if you were getting ready for reverse travel.
Q. Okay.
A. But it's mispositioned for forward travel. It's just a series of pictures that were taken either myself or Dr. Coates or Mr. Granat.
Q. Anything else that's significant about any of those photos other than the position of the caster latch?

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A. And the presence of the strap.
Q. Anything else?
A. No, sir.
Q. Okay. What's next?
A. The next is a series of notes that I made at the time of my inspection of unit 60628.
Q. All right. We'll mark those as Exhibit 31. What's next?
A. Next is a series of photos that I made at the time of my inspection of unit 60628.
Q. Okay. We will mark those as Exhibit 32. What is significant about any of those photos to your opinions in this case?
A. It was to document some of the pieces that were still laid on -- on the ground on the roadside. And also, there were some items that were there which were sort of helpful in understanding how the -- the test was set up, how power was applied to the vehicle in the demonstration. And those are the first few photographs which I think begin at one and go all the way to photo number ten. And then started looking at the -- the driveshaft that was provided and the damage to the driveshaft and just documented the -- the condition of that driveshaft in 11 through 15. Actually, that goes on through 26.

And then the next one is a series of photos
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that were of the undercarriage just showing the -- the condition of the tie rod, locking plates and the -- the physical evidence and the damage that were present on those various components are the next series of pictures that are in the undercarriage shots.
Q. Have any of your opinions or initial opinions about whether the driveshaft could -- if it separated on the transmission end, have any of your initial opinions changed about whether, after that separation, it could escape the harness on the differential end and make contact with different parts of the tag axle system?
MS. DORMAN: Object to form.
A. Well, if you're referring to what I see in the videotape, yes, if the conditions are right, it appears from the -- the testing that was performed by your experts that that can happen.
Q. (BY MR. HAYNES) So maybe I'm not remembering correctly, but does that mean your initial opinions have changed about that, or are they still the same?
A. I think my initial opinions are still the same with regard to my findings and the work that I did at the time of my first deposition. But I think if you look at your testing that was performed by your experts, if the conditions are right, it appears that you can get the driveshaft out.
Q. What do you mean if the conditions are right?
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A. Well, meaning this is a test setup, this is a test condition. And there's certain things that are happening in this particular test that it's obvious it's not being performed while the bus is driving down the road. You've got an axle that's being placed up off the ground, you've got another vehicle that is providing power to the transmission -- or providing power to the drive axle through a secondary unit.
And so there are certain things that are different from an actual roadway environment and there are certain elevations between the various axles that are happening in this environment.
So clearly, in those conditions, when you set it up in that fashion, it looks like you can get that driveshaft out.
Q. Do you think that in a roadway environment, that a driveshaft in a 102DL3 can separate at the transmission end and come out of the harness and cause damage to the tag axle assembly?
MS. DORMAN: Object to form.
Q. (BY MR. HAYNES) Tag axle system?
MS. DORMAN: Object to form.
A. Are you referring to in this -- in the Campos case? I guess I'm not quite sure what you're asking.
Q. (BY MR. HAYNES) No, I'm not specifically talking about the Campos case right now. I'm just trying to find out
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whether you believe that this could only happen under the conditions in this testing involving unit 60628, or whether it could actually happen under roadway conditions. Just trying to find out what your opinion is.

A. I think I'd have to --

Q. Or if you have one.

A. I think I'd have to have more information in order to be able to give you an opinion. I'd have to look at the physical evidence on the roadway as well as on the vehicle to be able to -- to answer that question.

Q. Okay. So as we sit here today, you don't have an opinion whether or not under roadway conditions if a driveshaft separated at the transmission end, whether it could escape the harness on the differential end and cause damage to the tag axle assembly and system --

MS. DORMAN: Object to form.

Q. (BY MR. HAYNES) -- is that correct?

MS. DORMAN: Object to form.

A. Right. Again, I -- I think I'd -- I'd have to look at all of the physical evidence that's created under that kind of condition in order to be able to answer your question.

Q. (BY MR. HAYNES) So it's -- if I'm hearing you right, you're saying it might be possible, but I'd have to see the evidence, I don't have a complete opinion at this time?

A. Correct.

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Q. Okay. What else is in here, in these photos that's significant to your opinions?

A. Just the circumferential abrasions again present on the exterior of the driveshaft. They're indicative of a driveshaft that's rotating around in a loop, so we know what -- what it is that's causing that and how that gets created and, again, it goes back to the issue that we were talking about earlier.

Q. Right.

A. I think that's -- that's it for that section.

Q. If I remember right -- and I haven't reviewed your first deposition in a while -- did -- you were present at the inspection with Mr. Hoogestraat -- I think it was you -- where the -- where the -- a driveshaft was separated manually at the transmission end and then it was kind of moved around within the harness to see what it would come into contact with.

Was that you?

A. Yes, we talked about that in the first deposition.

Q. Okay. And -- but as far as I know, you've not been involved in any testing of a driveshaft failure in any way similar to what Americanos did with unit 60628; is that right?

A. Are you saying have I done any testing where we've had a driveshaft rotating dynamically?

Q. Dynamic testing --

A. Dynamic testing --

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Q. -- involving a driveshaft separation --

A. I --

Q. -- to see what would happen?
A. I have not.
Q. Have you recommended that that be done?
A. No, I haven't.
Q. Why not?
A. I haven't seen it necessary. We already know what happens when a driveshaft separates.
Q. Well, what do you mean, we already know?
A. Well, we've got physical evidence that's very distinctive that's created in this particular case in this Campos crash, it's well documented. And there are a number of things that you can look at to help you determine what exactly is going on with this particular driveshaft, what is it actually doing with this vehicle. And its documented both in the physical evidence on the vehicle, as well as on the roadway. So there really isn't a need to go do that.
Q. Okay. Well, but you -- you're obviously very familiar with Americanos' theory that the driveshaft separated on the transmission end while the motorcoach was still on the roadway and that it escaped the harness on the differential end and caused damage to the tag axle system while the motorcoach was still on the roadway, right?
I mean, you understand that's Americanos'

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theory?
A. That it escaped the loop on the --
Q. Differential.
A. -- on the differential side? No, that's not my understanding of their theory.
Q. Okay. So your understanding is that it separated on the transmission end and -- driveshaft separated on the transmission end and made contact with the tag axle system while the motorcoach was still on the roadway?
A. Yes, sort of. More specifically, the theory is that the driveshaft separated and made contact with the tag axle lock assembly and disconnected it or unlatched it and also made contact with the caster latch mechanism and unlatched that as well. That is the theory as it currently stands.
Q. And you haven't recommended any dynamic testing to test that theory?
A. No, I have not.
Q. And my question is, why haven't you recommended any dynamic testing to test that theory?
A. I think there's been enough information in this case generated both in crash, as well as testing by your own folks that indicate that that's not necessary.
Q. Why do you think it's not necessary?
A. Well, because in general, if you look at the testing that was conducted by Americanos, there isn't a loss of

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control. The vehicle can be controlled, the vehicle can be brought to a stop, the vehicle can be steered.
But if you accept the testing and -- on its face value, there are problems with the testing -- there are

serious problems with the testing that have to do with the way that the vehicle was set up, which made the science invalid.

But if you set that aside and you just look at the testing itself, it tells you --

Q. And what -- and just, you know, like you said, there's been a lot of testing, so when you're talking about testing, which specific testing are you talking about?

A. I'm specifically talking about the -- the on-road testing that was just recently completed.

Q. Okay.

A. And I think that if you look at that and you look at the physical evidence that's created under those conditions and compare it to the physical evidence that was created on the -- in the Campos crash, it tells you, A, there's enough information out there where you don't need to do any more dynamic testing necessarily.

And the type -- and B, the testing that has been done basically tells you that the theory put forth by the Americanos experts doesn't agree with the physical evidence left on the roadway.

Q. Tell me if I'm hearing you right. What I think I

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hear you saying is that you're perfectly willing to accept Americanos' theory about what happened underneath the bus on the roadway, but you just don't think any further dynamic testing is necessary because even if it happened that way, it doesn't cause a loss of control of the motorcoach?

MS. DORMAN: Object to form.

Q. (BY MR. HAYNES) Is -- am I hearing you right, or not?

A. I'm not willing to accept the theory put forth by Americanos, let's be clear on that. Number one, I think that theory is wrong.

Q. And so that's -- that's my question, then.

If you think the theory is wrong, why haven't you suggested any dynamic testing to prove that it's wrong?

A. Because I don't think we need to. We don't need to.

Q. And you're saying that you don't need to test that theory because you think even if it's true, there's no loss of control of the motorcoach?

MS. DORMAN: Object to form.

Q. (BY MR. HAYNES) Is that right?

A. Well, I think -- correct. And I think if you look at the theory that has been put forth by the Americanos engineers and you look at their test results and you look at the testimony of their bus driver, Mr. Yohe, control isn't lost in those tests. The vehicle is still controllable.

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Mr. Yohe testified to that in the most -- the three tests that are the most case related, number nine, 12 and 13. He says that he still had control of the vehicle.

Q. So you have not recommended or participated in any driveshaft separation testing?

MS. DORMAN: Object to form.

Q. (BY MR. HAYNES) Is that true?
A. Again, if we're talking about something that's happening dynamically --
Q. Dynamically.
A. -- no, I have not.
Q. Has Carr Engineering performed any driveshaft separation testing on a 102DL3 for any client, to your knowledge?
A. Not to my knowledge.
Q. Who would know whether that's been done at Carr Engineering?
A. Me.
Q. No one else?
A. Correct.
Q. Okay. So you're -- you deny that Carr Engineering performed any driveshaft separation testing on a 102DL3 in August 2011?
A. Yes, sir.
Q. Or any other time while this case has been pending?

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A. Yes, sir.
Q. Okay. What else is -- do we have?
THE WITNESS: How are we doing on lunch --
MS. DORMAN: It's about lunchtime. I'll see if lunch is here.
THE WITNESS: Great.
MR. HAYNES: Want to try to get through this one real quick before we break for lunch? Is that okay?
MS. DORMAN: It all depends on you guys.
MR. HAYNES: It's up to you.
THE WITNESS: Sure. We can do this one.
MR. HAYNES: Okay. I think it will probably go pretty fast.
Q. (BY MR. HAYNES) The next section in your notebook involves, I believe, your inspection of the bus that was used for the Uvalde testing by Fugger and Yohe in January 2012?
A. Right.
Q. And that's unit 60624?
A. Correct.
Q. Okay. What disks do you have there?
A. These are disks that contain video and data that were provided by the Americanos experts for that series of tests. Yeah. I think every video or -- sorry -- every CD that's in here contains either videos or raw data.
Q. Okay.

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A. This is a -- a document that was provided as associated with the testing as sort of the test matrix --
Q. Right.
A. -- what the results were.
Q. Right. I've got that.
Is there any -- do you have any writing on here?
A. Yes, I do. I made some notations on what they were

as far as the types of tests and things that I could see. For instance, if there was -- the -- the horns that were on the caster latch mechanism, they were forward of the -- the plate. I made a couple of notations on that where I could see that and pick that out from a video of my preliminary evaluation of that videotape.

Q. Let me go ahead and just mark that, then, because it has some additional information on there. And we'll label it as Exhibit 33.

What's next?

A. It's just a couple of screen captures of some of the testing that was performed by the Americanos folks. This is screen captures from test 13 just showing the caster latch mechanism in a couple of different positions, most notably in the position during braking where the caster latch mechanism, the horns are extended -- or hyperextended in the forward direction during braking.

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Q. We'll mark those photographs as Exhibit 34.

What's next?

A. And -- and going back to these last ones. And the reason for that is that there is an important component that's been removed from the undercarriage of the test bus.

Q. And what is that?

A. It's the strap. It's the strap that we were talking about before. That's what allows these caster mechanism -- or caster horns to rotate so far forward on the braking.

Q. What's the effect of the caster rotating forward in the position that we see in the photos in Exhibit 34?

A. Well, you're going to increase the negative caster angle of the tag axle assembly. And by doing that, what you're going to do is you're going to end up likely to be creating tire forces and tire marks on the roadway surface during the testing. Things that may not even be present because you've increased this caster angle to such a severe angle in comparison to the case vehicle.

So you're maybe in a situation here where you've got yourself in such a large caster angle that you now are creating marks artificially on the roadway surface where you wouldn't see that if that strap had been in place.

Q. What's next? Anything else about that?

A. No, sir.

Q. Okay. What's next?

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A. This is just some pictures of the caster latch mechanism that I had selected from photos taken by Mr. Granat, Dr. Coates showing the positioning of the caster latch mechanism at the time of the -- the inspection.

Q. Okay. We'll mark those as Exhibit 35.

So that's just for comparison; is that right?

MS. DORMAN: Object to form.

A. It's --

Q. (BY MR. HAYNES) Oh, no, no, this is -- I'm sorry. Finish what you were going to say.

A. I was going to say I don't quite understand what your question was.
Q. Okay. Is there anything else that the photos in Exhibit 35 are significant for?
A. No, sir.
Q. Did you take any measurements or anything like that when you did the inspection regarding the caster latch --
MS. DORMAN: Object to form.
Q. (BY MR. HAYNES) -- that are shown in Exhibit 35?
MS. DORMAN: Object to form.
Q. (BY MR. HAYNES) I guess I'm looking at the ones here with the -- that were --
A. That's -- that's a photo taken by Mr. Granat.
Q. Okay. So that's not measurements that you took?
A. Right.

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Q. These are photographs that were -- photos in Exhibit 35 were taken by other experts. Some say Granat, some say Coates.
Does that represent who took the photos?
A. Yes, sir.
Q. Okay. Okay. What's next?
A. Next are a series of notes that I made at the time of my inspection of unit 60624.
Q. We'll mark those as Exhibit 37.
What's next?
A. Next is a series of photographs that I made to document the -- the test -- test coach from the way I found it. So I began at the exterior and then took some pictures of the interior and then noted some of the markings that were on the tires. And there was a -- a ram that was in the cargo area and documented that as well.
And just sort of generally just documented the -- the condition of the coach as I found it with some -- some equipment still on it -- or at least some measuring devices were still present on it. Those were the ones that were there before I got to the inspection. And just wanted to record the -- the findings as I saw the test coach.
Q. All right. And I skipped Exhibit 36. So we're going to mark these photos as Exhibit 36 or we're going to have a big problem at the end of the day.

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What is significant about the photos contained in Exhibit 36 to your opinions about the Fugger and Yohe Americanos Uvalde testing?
A. It just was sort of generally documenting the way that we -- we found the -- the coach and the condition it was in. It was really nothing more than that. I think the most notable thing about this particular coach is the absence of the strap that's on the undercarriage at the leading edge of the -- the plate.
Q. Okay. Have we finished the white notebook?
A. Yes.
MR. HAYNES: All right. It's lunchtime.

MS. DORMAN: Okay.
(Recess from 12:10 to 12:52 p.m.)
(Eric Green left the proceedings.)

Q. (BY MR. HAYNES) All right. Now we've moved from the white notebook to the red.

And what I'd like you to do, Mr. Rucoba, is identify for us in this red notebook the documents that have either been generated by Carr Engineering or sent to you since your first deposition.

A. Okay. The first thing I did was add some larger pictures of some photographs of the caster latch mechanism for the subject bus. They're photos that are either taken by myself or by Mr. Jones. And I've just put those and added

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those into the book.

Q. Okay. We'll mark that set of photos as Exhibit 38. And if you could identify for us in this set of photos identified as Exhibit 38 any in particular that you believe show something significant to your opinions in this case.

A. Again, the presence of the strap, which is important that you can see it's in front of the plate. The -- the photo that I selected which shows the -- the clevis in the roller on the -- on the driver's side or on the left side of the vehicle and you can see that there is a -- a trapezoidal ramp that is missing. That's a trapezoidal ramp that actually was found out at the crash site. If you look at the --

Q. And just -- if you don't mind, if you'll show me that photograph again.

A. Sure.

Q. Was -- is there a better one of what you were talking about, or is that --

A. That's a pretty good one. Here's another one. It's a little closer -- closer view of --

Q. Why don't we just -- we'll call it 38B.

A. And then I've got another photo which shows the -- the clevis and the roller that's on the passenger side or on the right side of the bus has slipped off of the trapezoidal ramp that's welded to the bottom of the -- of the plate. And that's that photo that shows that.

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And what you can see is that there's been a lateral shift in the caster latch mechanism. That's why the roller has fallen off the --

Q. What do you think --

A. -- ramp.

Q. What do you think is responsible for the lateral shift in the caster latch mechanism?

A. During the crash, there was some lateral movement of the caster latch mechanism which shifted laterally and that's what knocks this roller off of the ramp and that's likely what also broke off the ramp on the other side.

Q. And -- but what do you think is responsible for causing that lateral shift?

A. Well, I think that if anything, there's got to be

some movement that's happening likely as it's down near the point where it's furrowing would be one of the locations. It could be something that's happening up on the roadway, say, early on where there was some movement there to the structure. I just really don't know. I've got a variety of locations where that could happen.

But the presence of the -- the -- the -- one side slipping off the ramp can be explained possibly as it's furrowing as it sees the loading in the dirt. The side that's got the ramp broken off must happen up on the roadway because that's why the ramp would be found up on the roadway.

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Q. Can you show me that again about the -- being broken off, the part on -- you think probably happened on the roadway?

A. Yeah, that would be this part right here. This -- this picture that you marked as 38B, the ramp is missing. The ramp that is present there on the passenger side is gone.

Q. Is that what you said was found at the scene?

A. Yes, sir.

Q. Where was it found?

A. I can show you on my diagram.

Q. Okay.

A. But it's a -- it's a -- one of the times that's identified in the police -- the police measurements.

Q. While we're on this, can you go ahead and just show me?

A. Yeah. I believe it's this item that's been marked as -- I think it's E7. Better go look at the police photos, but I believe it's E7.

Q. And how could we, in words, identify what that location is?

A. On my diagram, it's approximately at the 550 foot station near the white edge stripe.

THE REPORTER: Did you say edge --

A. Stripe.

Q. (BY MR. HAYNES) And what is your opinion about what

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is responsible for causing that piece to come loose and be deposited on the roadway?

A. The only thing I could really see would be some sort of lateral shifting of the -- the clevis and the roller somewhere in this crash that would knock that piece off or break that piece off. I had a hard time trying to visualize how -- how else you could do that.

Q. Well, what -- what could be responsible for the lateral shifting --

A. I don't know --

Q. -- that would knock that piece off?

A. I don't know what -- what would do that.

Q. Is there any indication in the photographs of there being an impact mark in that area or anything that would be consistent with knocking it loose?

A. Nothing that I could see. Nothing that I could see

conclusively.
Q. Do you have an opinion whether the driveshaft could have impacted that area and knocked that piece loose?
A. I had a hard time trying to see how it could get the driveshaft in there, into that spot.
Q. What is this mark in 38B?
A. Looks like some sort of a -- of a contact mark of some sort, now rusted over.
Q. At the time of the photograph?

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A. Yes.
Q. Do you know who took this particular set of photographs?
A. Yes. I did.
Q. Okay. That's you?
A. Yes, sir.
Q. Okay. Is that an even closer-up view?
A. Yes, sir.
Q. Okay. What's next?
A. Next were a series of drawings that were sent to me. They were helpful in just giving me an understanding of what the -- the various components look like, just getting -- that help me with just grasping how the layout is between all these components and --
Q. These are components of the caster latch?
A. It's pretty much various drawings of various components for the latch arm assembly itself. You have things like the -- like the plate and the -- the clevis and the rollers. Kind of a -- pretty much everything there.
Q. We're going to mark that as Exhibit 39.
Who sent these documents to you?
A. I believe I got those from Mr. Dacus.
Q. Okay. What's next?
And before we leave that, is there anything that you learned from these documents that's significant to

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your opinions in this case?
A. No.
Q. Okay.
A. Just a general understanding of how the assembly is put together, what the components look like. I think those were the kind of things that I learned. I think it -- it was helpful from a standpoint of, say, for instance, looking at this particular piece here which has got the two horns on it for the -- the caster latch mechanism, it was helpful for me to be able to see this to understand what kind of modifications I could see were being made to this particular piece in the test subject performed by the Americanos folks.
Q. Anything else?
A. No. That's it.
Q. What's next that's new?
A. This is a -- a series of photos that I notated. They're either pictures of the crash taken on the day of the crash or photos that were taken by various Americanos folks

during their most recent round of testing and was just making some notations about what I see in those various pictures.

Q. Okay. And we're going to mark this set of photographs as Exhibit 40. Okay.

Well, I guess we need to go through them and you can explain to me what's important.

A. Sure.

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Q. Go ahead.

A. The first one is a -- a photo that was taken on the day of the crash. And this is the first sign of physical evidence as far as tire marks go. This is the one that's being created by the tag axle on the passenger side.

What's noticeable about this one -- this particular mark is that you see some ribbed striations that are inside this mark, it's a locked wheel and brake mark.

The other thing that you see is that it's clear, when you look at this -- this photo that there isn't another mark associated with this one. In other words, there's -- you don't see two marks, one from the passenger side tag axle and one from the driver's side tag axle. This is a lone mark by itself.

Q. Anything else?

A. No.

Q. Okay. What's next? And we'll call this 40B since we're talking about them individually.

A. Okay. Another view of the -- the tag axle tire mark. This is the -- the vehicle would be coming at you in this particular photograph. And you're looking at the striations, ribbed striations being made by the locked tag axle tire on the passenger side.

Now you're starting to see some of the wavy marks that you and I discussed in the first deposition. Wavy

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marks being made by the number two drive axle on the -- on the driver's side.

Q. Okay. What's next? We'll mark this one as 40C.

A. Little bit further down the road is another photo taken on the day of the crash. And it's showing the -- the tag axle on the right side leaving a pronounced ribbed striation like it has from the very beginning, meaning that it's locked up.

Q. What's next? We'll mark this as 40D.

What does 40D show?

A. 40D is a photo that was taken by the Americanos engineers. This is a photo of test number nine. There's a couple of things that you see here are the two tire marks, very pronounced, very noticeable, but it's a pair of tire marks that are being made by the tag axle in their demonstration. Always you see two marks being made.

As I indicated before in the other one, in the earlier police pictures, there's only one mark being made by the tag axle. What you don't see in the Americanos photos are any ribbed striations either. You'll just see this -- kind of

a mark here where you're seeing something in the way of a wavy mark, but you're not seeing any ribbed striations.

So there's some noticeable differences in the results and the findings from the Americanos tests when you compare them to the physical evidence on the -- the crash --

0098

on the day of crash.

Q. Anything else about 40D?

A. I think it also is -- is illustrative of what happens when you get a balanced braking system in a vehicle. And I think what you'll see here in the Americanos vehicle is that you've got balanced brakes, you've got brakes that are functioning on both sides and you always leave tire marks with both the left side and the right side, noticeable tire marks with the left side and the right side, things that are not being seen on the day of the crash.

Things that have to do with what I had talked about in my first deposition, why there was an imbalanced brake system in the Campos bus versus what we're seeing, for example, in these pictures, in the Americanos pictures where you've got balanced braking creating even marks on both sides.

Q. So if I'm understanding you right, you're saying that at the accident scene, we're only getting marks from one tag tire because there was an imbalance in the braking -- brake system?

A. Correct. In addition to other marks. You're going to see drive side tire marks -- drive -- you'll see number two axle driver's side tire marks being made by the subject bus and not -- you will not see those same kind of marks that match up with the passenger side drive axle.

Q. And you think that's because of an imbalance in the

0099

braking system?

A. Correct.

Q. What was the specific imbalance?

A. There's just not -- you're not getting equal amounts of braking from left to right. The imbalance on the right side is what initially starts to pull her towards the right. It's also the thing that she's doing is steering. So it's a combination of her steering and braking that send this vehicle off to the right.

Q. Let me show you what I've marked as marked as 40E.

Can you describe what's significant in this photograph?

A. Yes. It's a -- a view of test number 12. This is Americanos picture. Again, tag axle tire marks, they're in pairs. Noticeable pairs. We don't see any ribbed striations in this one either. So, again, it's another piece of physical evidence that does not match what we see on the -- the day of the crash.

Q. This next photograph I'm going to mark as Exhibit 40F.

And what is significant about this photograph to make you include it in Exhibit 40?

A. Same thing. Now we're looking at -- we're looking at two tire marks. Again, this is something that it's being made by the tag axles. You don't see any ribbed striations present in these tire marks. So what you're looking at is something, again, that's different from what we see on the day of the -- of the crash. And this is photo -- a photo taken of test 12. It's a little further down toward the rest of the test spots.

Q. I'm sorry. Tell me again which tires are making the marks that we see in --

A. The most --

Q. -- 40F.

A. The most pronounced are being made by the tag axle.

Q. On both sides?

A. Yes, sir.

Q. Are there any other tire marks visible?

A. Yes. You see some tire marks that are visible from the drive axles on both sides. So you have a pair of tandems that are light.

Q. Let me ask you this: The darker marks further along closer to where the motorcoach has stopped, are those -- do you know which tires are making those marks?

A. Well, certainly the ones on the right side, now you can start to see three tire marks there. You start to see the tag axle sort of going in between the two drive axles.

Q. Anything else significant about 40F?

A. No, sir.

Q. All right. The next one that you included in -- cover up the tire marks. The next one you included in this set of photos that we've marked as Exhibit 40 we're going to label 40G.

Can you tell us what's significant about this photograph?

A. Yes. This is another photo of test number 12, now a little bit closer to the point of rest of the test bus. And now you're starting to see a couple of things that happen here. You've got the number two drive axle here on the passenger side is leaving two pronounced locked wheel skid marks. But they're not of a wavy nature, so you're not seeing that same wavy pattern that we saw in the photos taken on the day of the crash.

Again, you're seeing two noticeable tag axle tire marks that go from beginning of the test all the way down to the point of rest of the vehicle, there's a noticeable set of tag axle marks that are being made.

MS. DORMAN: Can we go off just one second?

MR. HAYNES: Sure.

(Off the record from 1:11 to 1:12 p.m.)

Q. (BY MR. HAYNES) Did we finish talking about 40G --

A. Yes.

Q. -- before we were so unceremoniously interrupted?

MS. DORMAN: You can say rudely.

A. I think we have.

Q. (BY MR. HAYNES) Okay. We'll mark the next one as 40H.

What is significant about this one?

A. Significant about this one is this is a photo that was taken by one of the Americanos engineers. This is a photo of test 13. This is at the very beginning of the test. And here you see, again, two clear tag axle tire marks being created on the pavement.

Q. And this goes back to what you were saying earlier about we only see one in the accident site because of the imbalance in the brakes?

A. Exactly.

Q. I mean, that's the point --

A. That's the point. The other point is that you remember when we were looking at the accident scene photographs, you saw that striation being made by the tag axle. It's pretty much straight. So the tag axle isn't wavy, it isn't moving around, it's lined up straight ahead and that's why it's leaving ribbed striations. You don't see that in these tire pictures. What you see is a wavy mark, you don't see any ribbed striations.

Q. Anything else about 40H?

A. No, sir.

Q. Let's mark the next photo at 40I.

A. Same kind of a thing where I'm basically trying to show you that in test number 13, the photo captures the two tag axle tires creating noticeable marks. And they're creating them in a wavy pattern, something that you don't see on the day of the crash. And also, you don't see those ribbed striations that are present that we see on the day of the crash.

So again, it's telling you that the evidence that's getting created in this test and all the other tests are not reflective of what actually happened out there that day. And out there that day, I mean, on the day of the crash.

Q. Yeah, I understood what you meant. The next photograph I've marked as 40J.

A. Right. This is another photo of test 13. The same thing. Illustrating that you've got noticeable tag axle tire marks created in a pair, they're created in a wavy shape that you do not see on the roadway on the day of the crash. You do not see any rib striations being made in these tire marks like you did on the day of the crash.

Q. So basically the same -- you're making the same point, just with a different photograph from test 13?

A. Right. And also showing that it's -- this is not just a -- sort of a small little snapshot in the test and that I've only taken a picture from one section of the test. I took three photos to show you that this is a pattern that's consistent throughout all the way down to the point of rest of

the test bus.
Q. Is that all of Exhibit 40, or is this part of it?
A. That's all of them.
Q. Okay. All right. What's next that's new in the red notebook?
A. Okay. I -- I read in the depositions of a couple of your experts that there was some discussion about the trees posing some sort of obstacle to Ms. Morado and prevented her from pulling off the side of the road even in the grassy area because of the presence of these trees.

So I went and I found the -- the crash site on Google Earth and I had the roadway and I could scale off where the tree line was relative to the pavement edge and it's approximately 28 feet from the pavement edge to the tree line. And you can see that in the photograph that you've got ample amount of room.

So my opinion is that, yes, Ms. Morado is heading off this -- towards the -- the side of the road, she does have an ample amount of shoulder from which to maneuver her vehicle. But in the event that she continues and goes into the grassy area either fully or partially, she would still be able to straighten out her vehicle, bring it to a controlled stop and wouldn't have to worry about running into any of these trees because they're over -- almost they're 28 feet off the pavement edge. Provided that she doesn't

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input a steer amount that replicates the amount of steering that she put in when she tried to regain the lane. If she does over correct in the dirt like she did on the paved shoulder, then she would be in trouble.
Q. I've marked this -- is there a series of photos, or just this one?
A. Just that one.
Q. I've marked this as Exhibit 41. So let me ask you, do you believe that when the motorcoach went onto the right shoulder in this accident sequence, that continuing off the paved portion of the roadway to the right was a viable escape route for her to consider and take advantage of?
A. Yeah, I don't -- I don't know what you mean by escape route. But what I'm telling you is that --
Q. Just using Justin's language, if he's still there.
MR. HILL: That's Mr. Yohe's language, thank you very much.
A. See, is he paying attention.
Q. (BY MR. HAYNES) Yeah, I'm really surprised. Let me ask you the question again since I kind of interrupted everybody.

Do you believe going off the road to the right as opposed to trying to keep the motorcoach on the -- on the roadway was a viable option for Ms. Morado during this accident sequence?

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A. Yes. Let's make sure that we're talking about keeping it on the roadway and what that means. When I say

keeping it on the roadway, I believe that entering the shoulder is fine. I think that straightening your vehicle out on the shoulder is fine. I don't believe that reentering the roadway in a slide like she did is fine.

Given the trajectory that the bus is on, you can find yourself on the shoulder and be able to straighten yourself out, align yourself with the roadway in a controlled manner and bring your vehicle to a stop.

And if you go further than that, if you find yourself on a trajectory that takes you off into the grass partially, you have the ability to be able to straighten yourself out, align yourself with the roadway and bring your vehicle to a controlled stop.

Q. Off the roadway to the right?

A. Off the roadway to the right partially or fully.

Q. So if she found herself in this accident sequence where the motorcoach was headed in the direction that would have taken her off the roadway to the right, if I'm understanding you correctly, you're saying that that was something she should have gone ahead and let happen as opposed to trying to keep the vehicle on the roadway under all circumstances?

A. Well, certainly try to keep the vehicle on the

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roadway in the manner that she did is what ultimately caused the crash. It's the overcorrection to the left. That wasn't necessary, there were other options available to her.

Notably, she could have just stayed on the shoulder. She could have gone off even partially into the grass. As long as she's aligning herself with the roadway and then bringing her vehicle to a controlled stop, that would have been fine. It's the regaining the roadway under any circumstances that got her in trouble and ultimately led to the crash.

Q. And what you're saying is a viable option that was available to her was taking the motorcoach off the roadway to the right?

A. Sure. Yes, sir. That was one of the several options available to her.

Q. That you would consider a reasonable option?

A. Sure. I do consider that reasonable.

Q. And what do you show was her approximate speed when she would have been taking her vehicle off the roadway to the right?

A. I can go look at my speed calculations. Let's see. Based on my speed calculations, her vehicle is traveling approximately 50 to 57 miles per hour at the time she puts her vehicle into that severe left turn and reenters the roadway in a slide.

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Q. Can we go back to where we were in your notebook?

A. You bet.

Q. Back here. What's next in your notebook?

What are these?

A. Those are deposition summaries. I think all of those were marked at my deposition last time.
Q. Okay. All right.
A. I think that's all -- I don't think there's anything new that has been added to that deposition packet. This is a page of calculations that I made. And --
Q. Let's mark that as Exhibit 42.
Can you describe what those calculations concern?
A. Sure. They kind of go along with a number of pages that are yet to be discussed that are in that bankers box. But it's basically looking at the brake testing that was performed by the Americanos engineers. In particular, there is a series of brake tests which are number four and number seven and number eight.
And what I did was I looked at, well, under the action of proper braking and proper balanced braking, if you apply the brakes like the Americanos engineers did and the vehicle travels 300 feet, which is basically what it would get you from the first tire mark to the point where the bus is off the shoulder on the right-hand side of the road, what is the

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speed of the bus at that point in time based on the Americanos tests. That was number one.
And number two is, given the speed that's been generated by the Americanos testing, what would happen if the bus driver was to then overcorrect, jerk on the wheel and put the vehicle into a slide and reenter the roadway in a slide, what would happen to the bus under those conditions, would the bus make it to the median. And what these calculations show is that basically the bus would enter a slide, but it would stop in the middle of the road.
So the gist of it is is that with a properly balanced brake system, the Americanos tests show that Ms. Morado would be able to reenter the roadway even in a slide and the bus would have just slid out and stayed in the middle of the road and there would have never been a -- a wreck.
Q. You'd be really surprised if I started asking you technical questions about these calculations, wouldn't you?
A. Yeah, you did the last time, so --
Q. I would be the most surprised person in the room. Okay. So let me ask you this: I think what I'm hearing from you is that the reason she wasn't at -- from the point of the first tire mark to 300 feet down the roadway, you say, is where the -- the -- approximately where the left turn starts?
A. Right. That's correct.

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Q. And you're saying that the reason she couldn't bring the vehicle to a stop in that distance is because of the imbalance in the brake system?
A. Correct.
Q. And are you saying that these calculations prove that the imbalance in the brake system is what prevented her

from bringing the vehicle to a stop in that distance that we're talking about?

A. Well, it shows two things. The calculations just show that with properly balanced brakes like the Americanos' test bus, it shows that the vehicle's speed drops to anywhere from 17 to 32 miles an hour depending upon what test you look at. So at the end of the 300 feet, you're going 17 to 32 miles per hour.

Had that been the case, with properly balanced brakes and she had then chosen to put in that drastic amount of steer and overcorrected to the left, the vehicle would have entered a slide. But it would have only slid out anywhere from 42 to 148 feet and then it would have come to rest. When you had -- when you needed 208 feet in order to get it all the way across the road.

Q. And if I'm understanding you right, you're basing these calculations on the -- the Fugger and Yohe Americanos Uvalde testing in January of 2012; is that correct?

A. That's correct.

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Q. And you're specifically using the test results from tests four, seven and eight?

A. Right.

Q. Why did you select those particular tests?

A. Because they were braking tests that were performed at near 70 miles per hour. Now, the other thing that you see when you look at the Yohe data is that Mr. Yohe was able to stop this vehicle in these three tests in under 400 feet.

And if you look at my diagram, you'll see that under 400 feet -- or at 400 feet of travel or less, this bus would be positioned on the shoulder of the road.

Q. Anything else about Exhibit 42?

A. No, sir.

Q. Anything else that's new in your red notebook?

A. No, sir.

Q. All right. We're moving along fast compared to the morning. But I'm afraid to open that box. I thought that was all old stuff. Well, if makes you feel better, I moved my flight.

A. Did you move it up, or did you move it back?

Q. I moved it back.

A. That doesn't make me feel better. There is -- okay. I brought a -- I brought a banker box full of material, but this is a combination of stuff that I got before my first deposition and after my first deposition.

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Q. I was afraid of that.

A. There are a couple of things that I know that I can I can pull out --

Q. Okay.

A. -- that I --

MR. HAYNES: Why don't we go off the record for a minute.

(Recess from 1:29 to 1:38 p.m.)

Q. (BY MR. HAYNES) Mr. Rucoba, earlier we were talking about a piece of metal from the caster latch mechanism that you identified where it was discovered on the roadway by DPS; is that correct?
A. Yes, that's correct.
Q. Can you identify the photograph that I'm handing you that we've marked as Exhibit 43?
A. Yes. This is the police photo of evidence item number seven, which is the -- the trapezoidal ramp.
Q. Okay. That corresponds to E7 on your diagram?
A. Yes, sir.
Q. All right. You were -- during the break, you had a chance to look through all the different documents in your box. And I think basically you pulled out one -- one document that, I guess, is since -- new since your last deposition that we were going to discuss; is that correct?
A. Correct.

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Q. And I'm going to mark that as Exhibit 44.
Can you identify what Exhibit 44 is?
A. Yes. Exhibit 44 is a series of documents that were produced by -- I think it was Mr. Yohe with regard to the -- the testing that he performed in January of 2012. It contains a series of photos V-box data output and test descriptions.
What I did was I selected a couple of those tests, the braking tests that we were talking about earlier. I looked at the V-box data that was provided by Mr. Yohe, I expanded the -- the data so I could look at it a little closer and use that information to come up with my opinions that were tied to the braking calculations that we discussed before the break.
Q. Is there anything specifically that you wanted to point out in Exhibit 44?
A. Yes. At the very beginning of this stack of documents, I have reproduced the V-box data that was provided by Mr. Yohe. And what you see is a printout that shows the vehicle speed as a function of distance. And it's what I used to determine at the end of 300 feet just what is this vehicle traveling at given these three types of braking tests that were performed by the Americanos experts.
Q. And these are for tests four, seven and eight?
A. Yes, sir.
Q. All right. And it's your opinion that these

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documents that we'll mark as 44B, C and D support the opinion that you were providing earlier about the distance that would have been required from the first tire mark for Ms. Morado to bring the motorcoach to a stop if the brakes had been in proper balance?
A. Right.
Q. I said that right?
A. Yes, you did.
Q. Okay. Anything else about 44B, C and D that you wanted to say?

A. No, sir.
Q. What else in Exhibit 44 is significant?
A. This is just the back-up documentation. These are the -- the various charts and photographs that were provided by Mr. Yohe for the -- the tests that I was looking at.
Q. All right. You pulled out a few other things that I think we're not going to mark out of your -- you pulled a few other things out of your box that I don't think we're going to mark. But can you, just for the record, tell me what you pulled out?
A. That's nothing that I pulled out. This is -- this is a -- a hard drive that was provided to me. It contains some of the video files and some of the V-box files from the testing that was performed by the Americanos folks.
Q. In January of 2012 at Uvalde?

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A. In 2012, right. It's my understanding that there were four V-box units on the test bus. I only have two V-box files. I believe that there is a request out there for the additional V-box files. And I'd like to see those as well.
Q. You believe there is two additional V-box files of data that you have not received yet?
A. Right. Based on what I saw in the test setup information that was provided somewhere in the exhibits for the various experts, I -- I believe that there's four V-box units that were onboard the Americanos test bus and I know that I've only been given two V-box data files per test so far.
Q. Okay. I think we're down to this additional white notebook that has deposition summaries and so forth in it. And I -- unless you tell me there's some reason that you want to spend another two hours here this afternoon, I'm going to mark it all as Exhibit 45.
A. That's fine with me.
Q. And I'm going to hand you Exhibit 45 and just ask if there's anything in addition to deposition summaries in there that you think is significant that we haven't discussed with respect to your opinions in this case, either in your first deposition or today.
A. No, I -- I think that -- I mean, I think my opinions, I think, are pretty clear and you'll see that

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there's some differences, I think, in some of the accident reconstructionists for Americanos and their theories that they've put forth. I think we've kind of touched on a lot of those. And I think my report kind of clearly spells out what I think my opinions are with regard to all the various bus units.
Q. I'm looking at your supplemental report which we've previously marked as Exhibit 15. And there's an attachment A file materials that goes with it and there's just a few things that probably everybody in this case knows what they are except me, but I'm going to ask you.
Boroscope pictures, what is that?

A. That's some metallurgical work that was done as best I know. That's nothing that I generated.
Q. Sensor tester results?
A. That's --
Q. And this isn't a test. I'm just trying --
MS. DORMAN: Do you want me to tell you?
MR. HAYNES: Sure.
MS. DORMAN: Okay. The Boroscope and the sensor were used during the June 30 and July 1st inspections in Louisville. And so that wasn't Bob's deal, that was Greg Wright and Aaron Jones and Virgil Hoogestraat. Just trying to streamline.
MR. HAYNES: Yeah, I appreciate that.

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Q. (BY MR. HAYNES) And then on the last page, there's an item called tests run configurations.
What is that? Do you want to look at it?
A. Yeah. Oh. Yes. That is the matrix. That's the test -- the test matrix that we looked at earlier which I believe got marked because I had some handwritten notations on there.
Q. The one from the Americanos --
A. Yes.
Q. -- Fugger, Yohe testing?
A. Right.
Q. Correct me if I'm wrong, but it seems like you have not performed a standard accident reconstruction in this case.
A. You're wrong.
Q. Okay. So is there anything that you haven't done in this case that you would normally do if you were going to reconstruct an accident?
A. I think --
MS. DORMAN: Object to form.
A. I think I've done everything I would normally do with regard to accident reconstruction.
Q. (BY MR. HAYNES) Okay. Have you suggested any additional testing to the attorneys from MCI?
A. No, sir.
Q. Do you see your role in this case as solely to

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criticize the Americanos' theories, or also to determine what caused this accident?
MS. DORMAN: Object to form.
A. I see my role as someone that's been asked to analyze, investigate and reconstruct this crash.
Q. (BY MR. HAYNES) And as part of your reconstruction, do you see your role as helping to determine what caused this accident?
A. Yes, sir.
Q. Since your first deposition, have you been hired either by MCI or MCI's attorneys to work on or look at any other accidents or cases?
A. No, sir.
Q. What's your overall impression of the Fugger, Yohe

Americanos' testing in Uvalde in January 2012?
MS. DORMAN: Object to form.
A. Overall, it's flawed and unscientific. And in addition, it -- it should not be presented as being representative of an MCI bus in its as-designed configuration.
So not only the -- the results, but also the physical evidence that gets generated from that has been grossly skewed by the hyperextension of the caster latch mechanism in that series of tests. And it should, therefore, not be used at all because it's not been in a -- under scientific -- under the proper scientific conditions.

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Q. And if I'm -- tell me if I'm understanding you right.
Is your criticism based primarily on -- on the issue involving the caster latch and the absence of the strap?
A. Yes. Specifically that. Because that is the key theoretical component that's left with the Americanos theory. The tag axle unlatching by itself is no longer their theory.
Their own expert, Mr. Yohe, has testified that driving the bus with an unlocked tag axle was just fine, he would drive it across the United States that way.
So now you're down to the one key component which is you've got to have an unlocked tag axle and an unlocked caster latch mechanism. So the caster latch mechanism becomes the key point in the theory.
And what they've done is gone and removed a strap which now creates a completely different configuration that's far removed from the as-designed configuration and, therefore, is now skewed and made the scientific data invalid.

Q. In your opinion, did Mr. Granat's testing analyze the effect of the tag tires becoming steerable on a driver's ability to control the motorcoach at highway speeds?
A. Yes. Yes, I believe he did. I think we kind of discussed that in my first deposition that I felt that Mr. Granat's testing did show that.

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Q. During any of Mr. Granat's testing in Uvalde, did the tag tires turn to the extent that they could steer the bus -- motorcoach?
A. In its as-designed configuration, that will not happen. And I think Mr. Granat showed that.
Q. In light of your testimony about taking the motorcoach off the road to the right as a viable option for Ms. Morado, do you fault her for trying to keep the motorcoach on the road?
MS. DORMAN: Object to form.
A. Well, finding fault is kind of a legal term. That's not really what engineers do. But clearly the cause of this crash is the driver's steering and braking actions in the presence of that driveshaft failure.
But the final thing is that overcorrection by Ms. Morado that ultimately puts the vehicle into a broadside

slide and causes it to slide into the median and roll over.
Q. (BY MR. HAYNES) Let me change the wording.
Do you criticize Ms. Morado for trying to keep the motorcoach on the roadway instead of driving it off the roadway to the right?
A. I --
MS. DORMAN: Object to form.
A. Again, I think, as I said in my first deposition, I haven't been hired to be a critic, but it's the reentry path

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that she shows -- that she chose was an overcorrection. And that's -- that's what got her into trouble and ultimately caused the crash.
Given that she's got a mechanical problem, she had other choices available to her staying onto the -- staying on the shoulder was one of those options, not reentering the roadway. And certainly not reentering the roadway in a broadside slide.
Q. (BY MR. HAYNES) If I'm hearing you right, you're not criticizing her for trying to keep the motorcoach on the roadway, you're criticizing her for what you believe to have been an overcorrection to the left --
A. Right.
Q. -- is that true?
A. Well, I think that's -- I think you're saying it right. It's -- I -- I find that one of the causes of this crash was that she tried to reenter the travel lanes with an abrupt maneuver.
Now, she has the option to be able to stay on the pavement, stay on the roadway surface and that -- had she chose to do that, I think she would have been just fine.
So I do -- I do find that the cause of this crash is that she chose to reenter the travel lanes in a manner that was in a broadside slide.
Q. Do you have an opinion as to the amount of steer

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input to the motorcoach for it to go over onto the right shoulder?
A. No. I think you asked me that in my first deposition.
Q. I did. And I just want to see if you've done any additional work in --
A. No, I haven't done any additional work. And I can tell you, just like I did in the first deposition, I don't know the magnitude, but I can tell you that the steer input that she put in was hard enough and fast enough such that it put it into a broadside slide.
Q. And I'm -- and just to -- I'm still asking about the steer input to take the vehicle to the right shoulder.
A. Oh, I thought we were talking about the steer input to the left to regain the road now.
Q. Let me repeat the question because I -- I may have said it wrong.
Do you have an opinion as to the amount of

steering input to take the motorcoach to the right shoulder?
A. No, I do not.
Q. Do you have an opinion as to the amount of steer input that you say she used to overcorrect and go to the left and eventually the motorcoach to go into the median?
A. I don't have a magnitude. I can only tell you that it was hard and fast enough to the left to cause it to go into

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a broadside slide.
Q. Are you able to make either of those type calculations? I'm not going to ask you to do it right now. I'm just asking, is that something that you're able to do or that's something that another expert who knows different things from you would have to do?
A. No, I -- I think you could do it. I think that the -- there are things you could do using computer programs, although I'm cautious about using any of the ones that are out there that I know of because I'm not so sure that they're properly validated for this kind of a -- this kind of a vehicle.

But I think that you could easily take a vehicle out there and replicate that on a -- with a safe track, of course. I wouldn't do this on public road. But I think that taking it through a course under controlled conditions, I think one could quantify it, at least bracket it.

Q. Do you have an opinion about the condition of the caster latch just before the driveshaft separated in this accident?
A. Well, from what I understand, there is no air going to the caster cylinder, the caster latch cylinder. So it can't move, from what I have understood about this mechanism. So I think that likely the position that you see it in today

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is somewhat close, if not right on, to where it was at the time of the -- time of the event.
Q. Do you have any other new or supplemental opinions regarding this case that we haven't discussed here today?
A. No, I don't -- I think we've covered everything that I believe I've done in some fashion through all of the documents, through all of the calculations and things.

I do want to go back to one thing that you had asked me early on in the deposition and sort of refer you to my report. You had asked me what I thought made the marks on the lock plates. And I had said that, you know, driveshaft is one of the objects that could make those marks.

But I want to make sure that we're clear on that -- that issue. If you look at my first report on paragraph number eight, I talk about those marks on the lock plate. And how --
Q. Tag axle lock plate?
A. Yes, sir.
Q. I'm sorry. You want to finish?
A. Right. And I just want to sort of refer you to that

section there because I think it was a lot more clear than just the simple question and answer session that we just went through this morning.

Q. All right. So this morning, you told me that the driveshaft -- the way I understood you was this morning, you

0125

said the driveshaft, in your opinion, made the marks on the tag axle lock plate that were shown in some photos of the tag axle lock plates after the accident in one of the inspections.

Are you changing that right now, or --

A. Well, I think I'm clarifying it. Let me just read you what I wrote at the end of my paragraph eight in my very first report because I think it clarifies it better and you may have a question after that.

But I said, in my inspection of an exemplar bus, I found it impossible to replicate the --

THE REPORTER: I'm sorry, could you --

THE WITNESS: I'm sorry, I didn't mean to speak so fast.

A. In my inspection of an exemplar bus, I found it impossible to replicate the contact mark between the driveshaft and the locking plates when the transmission joint was disconnected. I found it possible for the driveshaft to contact the locking plates when both the transmission and differential U-joints are disconnected. However, the motion required to move the driveshaft into the contact zone did not agree with the laws of physics or the physical evidence.

To date, no clear evidence has been produced that shows the impact mark on the locking plate while the bus was on its side at the point of rest.

Q. (BY MR. HAYNES) That -- yeah, that doesn't really

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clarify it for me.

A. Well, first off, you had asked me what made those marks on the locking plates. And I'm --

Q. I thought you said the driveshaft earlier today.

A. Right. And I did. And I did. But I want to make sure that we're clear that I still haven't seen any conclusive evidence to me that tells me that those marks are on the locking plates while the bus is sitting on its side.

Q. So when do you think the driveshaft made those marks on the locking plates?

A. I don't know when those marks were made. But it's not been conclusive that those marks were made while it -- before it came to rest. The pictures don't support it clearly.

However, if you say that those marks are there, then the only thing that I could see that could do that would be a driveshaft doing something odd to make those marks, some odd motion to make those marks.

Q. Okay. I think I'm hearing you.

A. Okay.

Q. Tell me if I'm wrong. You're saying that it's possible those marks were made sometime subsequent to the

accident, but if they were made during the accident, the only thing you can think of that could have made them would be the driveshaft?

A. Correct.
Q. Anything else that you want to clarify?
A. No, sir.
MR. HAYNES: What I'd like to do is take about a five-minute break and review your report again to see if there's anything else I want to ask you about.
Is that okay, Melissa?
MS. DORMAN: Certainly.
MR. HAYNES: Okay.
(Recess from 2:03 to 2:09 p.m.)
MR. HAYNES: I don't have anymore questions for you.
MR. HILL: I don't have any questions.
MS. DORMAN: We'll reserve ours.
(End of deposition at 2:09 p.m.)

CHANGES AND SIGNATURE

WITNESS: ROBERT RUCOBA

PAGE	LINE	CORRECTION	REASON

25 _____
0129
1 I, ROBERT RUCOBA, have read the foregoing deposition and
2 hereby affix my signature that same is true and correct,
3 except as noted above.
4 _____
5 (Signature of Witness)
6 THE STATE OF TEXAS)
COUNTY OF _____)
7
8 Before me, _____, on this day personally
9 appeared ROBERT RUCOBA, known to me (or proved to me under
10 oath or through _____) (description of identity card
11 or other document) to be the person whose name is subscribed
12 to the foregoing instrument and acknowledged to me that they
13 executed the same for the purposes and consideration therein
14 expressed.
15 Given under my hand and seal of office this
16 ____ day of _____, 2012.
17 _____
18 NOTARY PUBLIC IN AND FOR
THE STATE OF _____
19
20
21
22
23
24
25
0130
1 CAUSE NO. 2010-03-1717-C
2 DANIEL CAMPOS, ET AL. X IN THE DISTRICT COURT
X
3 VS. X 197TH JUDICIAL DISTRICT
X
4 AMERICANOS, U.S.A., L.L.C., X
ET AL. X CAMERON COUNTY, TEXAS
5
6 REPORTER'S CERTIFICATE
7 DEPOSITION OF ROBERT RUCOBA
8 March 23, 2012
9 I, Laura D. Glenn, Certified Shorthand Reporter in and
10 for the State of Texas, hereby certify to the following:
11 That the witness, ROBERT RUCOBA, was duly sworn by the
12 officer and that the transcript of the oral deposition is a
13 true record of the testimony given by the witness;
14 That the deposition transcript was submitted on
15 _____, 2012, to the witness or to the attorney
16 for the witness for examination, signature, and return to
17 COMPEX Legal Services, Inc. by _____, 2012;
18 That the amount of time used by each party at the
19 deposition is as follows:
20 Mr. Stephen Haynes (3 hours, 35 minutes)
21 That pursuant to information given to the deposition

officer at the time said testimony was taken, the following includes counsel for all parties of record:

0131

JUSTIN A. HILL and ERIC GREEN, Attorneys for Plaintiff(s);

STEPHEN HAYNES, Attorney for Defendant(s) Americanos U.S.A. L.L.C.;

MELISSA DORMAN, Attorney for Defendant(s) MCI.

I further certify that I am neither counsel for, related to, nor employed by any of the parties or attorneys in the action in which this proceeding was taken, and further that I am not financially or otherwise interested in the outcome of the action.

Further certification requirements pursuant to Rule 203 of TRCP will be certified to after they have occurred.

Certified to by me this _____ day of _____, 2012.

_____

LAURA D. GLENN, Texas CSR No. 2762
Expiration date: 12-31-2013
COMPEX Legal Services, Inc.
3201 Cherry Ridge
Suite B-207
San Antonio, Texas 78230
(800) 969-6424 Phone
(800) 259-0247 Fax

0132

FURTHER CERTIFICATION UNDER RULE 203 TRCP

The original deposition was/was not returned to the deposition officer on _____, 2012;

If returned, the attached Changes and Signature page contains any changes and the reasons therefor;

If returned, the original deposition was delivered to Stephen Haynes, Custodial Attorney;

That $_____ is the deposition officer's charges to the attorney(s) representing the Defendant Americanos, U.S.A., L.L.C. for preparing the original deposition transcript and any copies of exhibits;

That the deposition was delivered in accordance with Rule 203.3, and that a copy of this certificate was served on all parties shown herein on and filed with the Clerk.

Certified to by me this _____ day of _____, 2012.

16
17
18
_____
LAURA D. GLENN, Texas CSR No. 2762
19 Expiration date: 12-31-2013
COMPEX Legal Services, Inc.
20 3201 Cherry Ridge
Suite B-207
21 San Antonio, Texas 78230
(800) 969-6424 Phone
22 (800) 259-0247 Fax
23
24
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PE12-007

MCI

4-27-2012

Response 9

Hoogestraat

0001

CAUSE NO. 2010-03-1717-C

DANIEL CAMPOS, ET AL.,) IN THE DISTRICT COURT OF
)
Plaintiffs,)
)
VS.) 197TH JUDICIAL DISTRICT
)
AMERICANOS, U.S.A.,)
L.L.C., ET AL.,)
)
Defendants.) CAMERON COUNTY, TEXAS

****

ORAL AND VIDEOTAPED DEPOSITION OF
VIRGIL HOOGESTRAAT
SEPTEMBER 23, 2011

****

ORAL AND VIDEOTAPED DEPOSITION of VIRGIL HOOGESTRAAT, produced as a witness at the instance of the Defendants, Americanos USA, L.L.C., Greyhound Lines, Inc., and Irma Mendoza Morado, and duly sworn, was taken in the above-styled and numbered cause on the 23rd day of September, 2011, from 9:37 a.m. to 5:52 p.m., before Christi Fuhrmann, CSR in and for the State of Texas, reported by machine shorthand, at the offices of Hartline, Dacus, Barger & Dreyer, L.L.P., 6688 North Central Expressway, Suite 1000, Dallas, Texas 75206, pursuant to the Texas Rules of Civil Procedure and the Notice attached hereto.

0002

A P P E A R A N C E S

FOR THE PLAINTIFFS, LEONOR AND SELINA AGUILAR:

Mr. Roberto L. Ramirez
THE RAMIREZ LAW FIRM, PLLC
820 East Hackberry Avenue
McAllen, Texas 78501
(956) 668-8100
(956) 668-8101 Fax

FOR THE DEFENDANTS, AMERICANOS USA, L.L.C., GREYHOUND LINES, INC., AND IRMA MENDOZA MORADO:

Ms. Tamara L. Rodriguez
Mr. Nicholas B. Dominguez
Mr. Steven M. Vidaurri
VIDAURRI, LYDE, RODRIGUEZ & HAYNES, L.L.P.
202 North Tenth Avenue
Edinburg, Texas 78541
(956) 381-6602
(956) 381-0725 Fax

FOR THE DEFENDANTS, MOTOR COACH INDUSTRIES, INC. AND MCI SERVICE PARTS, INC.:

Ms. Melissa Dorman
HARTLINE, DACUS, BARGER & DREYER, L.L.P.
6688 North Central Expressway
Suite 1000
Dallas, Texas 75206
(214) 369-2100
(214) 369-2118 Fax

FOR THE DEFENDANT, ARVINMERITOR, INC.:
Mr. Thomas M. Bullion, III (via telephone)
GERMER & GERTZ, L.L.P.
301 Congress Avenue
Suite 1700
Austin, Texas 78701
(512) 472-0288
(512) 472-0721 Fax

0003

A P P E A R A N C E S
(Continued)

ALSO PRESENT:
Mr. Timothy J. Nalepka - Senior Vice President, General Counsel & Secretary
Motor Coach Industries
Mr. Jim Dickson - First Group
Ms. Imelda Perez - Paralegal
Mr. Craige Bandy - Videographer

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P R O C E E D I N G S
THE VIDEOGRAPHER: We're on the video

record. The time is 9:37 a.m. on September 23rd, 2011.
THE REPORTER: Mr. Hoogestraat, if you'd raise your right hand, please.
VIRGIL HOOGESTRAAT,
having been first duly sworn, testified as follows:
EXAMINATION
BY MS. RODRIGUEZ:
Q Please state your name for the record.
A Virgil Hoogestraat.
Q Mr. Hoogestraat, I'm Tamara Rodriguez. We've met before, correct?
A Yes.
Q You understand that I'm here on behalf of Americanos USA, L.L.C. in a lawsuit that's been filed against your employer and my client?
A Yes.
Q And you have a unique role in this case now since our last deposition. You've got the dual role of an expert for MCI and you're still the vice president of engineering design for MCI, correct?
A Yes.
Q In those dual roles, did you investigate this accident?

0008

A Yes.
MS. DORMAN: Object to form.
A I inve-- I went to some inspections of the -- in Louisville and as well as a -- looked at an exemplar bus in Los Alamitos.
Q (BY MS. RODRIGUEZ) Would that accurately describe your complete investigation of this accident?
MS. DORMAN: Object to form.
A I also pulled together, looked at the drawings. I looked at the test -- old test reports. I looked at the information supplied by their experts as well as the other information supplied by Americanos, their -- the -- as well as I reviewed or viewed the information provided by the passengers as well as the Texas Department of Transportation. I'm not sure if that's the correct statement of their department as far as the information they supplied.
Q (BY MS. RODRIGUEZ) Anything else?
A I'm sure there's other things. I just can't remember them at this time.
Q Fair to say the information supplied by other experts, you've not been able to validate their information or opinions, correct?
MS. DORMAN: Object to form.
A Excuse me. What do you mean by validate?

0009

Q (BY MS. RODRIGUEZ) Did you go back and check it to see if they had the right facts?
MS. DORMAN: Object to form.
A I looked at them, at their information they had

supplied. And if there was something that their -- information that was not accurate, I was not aware of it.
Q (BY MS. RODRIGUEZ) You didn't go back and check it, did you?
MS. DORMAN: Object to form.
A Check -- what do you mean by check, please?
Q (BY MS. RODRIGUEZ) Check the facts to see if they got the facts right.
MS. DORMAN: Object to form.
A Well, one expert had the calculations and the controls -- control of the analysis of their suspension and some of those facts were incorrect.
Q (BY MS. RODRIGUEZ) Who was that?
A It was one of your experts. Had some calculations. I don't remember his name.
Q Did you go through every experts' calculations and check them to make sure that they were accurate?
MS. DORMAN: Object to form.
A Not every experts' calculations, no.
Q (BY MS. RODRIGUEZ) You just focussed on the Americanos experts?

0010

A No.
MS. DORMAN: Object to form.
A I focused on -- I looked at if they used some values that I thought were wrong on any expert, that's the ones I looked at.
Q (BY MS. RODRIGUEZ) What about facts about where the tire prints were or the evidence collected? Did you go back and check all those facts?
MS. DORMAN: Object to form.
A I did not go and check where the evidence was collected. I mean, I took the information supplied by the Department of Transportation where the evidence was at and the other information that was supplied. I did not go back to the scene and check if that's where the evidence was at.
Q (BY MS. RODRIGUEZ) So you'd agree with me that you were not able to check all the facts of any -- of all the experts in this case, correct?
MS. DORMAN: Object to form.
A I checked as many facts as I thought I could.
Q (BY MS. RODRIGUEZ) And is it up for the jury to guess how many that is, Mr. Hoogestraat?
MS. DORMAN: Object to form.
A I think I went through as -- as best I could and looked at every fact that was there.

0011

Q (BY MS. RODRIGUEZ) Oh, you were thorough and meticulous in this investigation, weren't you, Mr. Hoogestraat?
MS. DORMAN: Object to form.
A I was as meticulous as I could be.
Q (BY MS. RODRIGUEZ) All right. And you're proud

of your investigation of this accident?
MS. DORMAN: Object to form.
A I did the best I could on this accident.
Q (BY MS. RODRIGUEZ) Can you tell the ladies and gentlemen of the jury if you're proud of your investigation?
MS. DORMAN: Object to form.
A What do you mean by proud of my investigation?
Q (BY MS. RODRIGUEZ) You don't know what it means to be proud of some work that you've done?
MS. DORMAN: Object to form.
A I don't know what you mean in this context.
Q (BY MS. RODRIGUEZ) Well, do you know what it means to be proud when you complete a job?
MS. DORMAN: Object to form.
A Yes, I do.
Q (BY MS. RODRIGUEZ) Are you proud of the job you've completed so far --
MS. DORMAN: Object --

0012

Q -- Mr. Hoogestraat, in terms of investigating this accident as an expert and vice president of engineering for MCI?
MS. DORMAN: Object to form.
A I have looked into every detail I can at this time and there will probably be other details that come out later that I will look into those also.
Q (BY MS. RODRIGUEZ) So you can't say whether you're proud of your work or not at this point, right?
MS. DORMAN: Object to form.
A At this point in time, I'm still loo-- we're still looking into things as -- if they come up. You're not proud of it until you're a hundred percent done.
Q (BY MS. RODRIGUEZ) So you're not done with your investigation even though it's been over a year since this accident. Is that what you're telling us?
MS. DORMAN: Object to form.
A I'm saying I went through everything I have to date. If there's something else that could come up, then I'll look into it.
Q (BY MS. RODRIGUEZ) You've done all the testing that you can possibly think of, correct?
MS. DORMAN: Object to form.
A We've had experts that did some of the testing that I was -- was not involved with and there's been

0013

other people doing testing also. There was metallurgists doing testing. I am not a metallurgist. So those people did their -- what their specialty is.
Q (BY MS. RODRIGUEZ) Are you satisfied with the testing that your lawyer, Ms. Dorman, has commissioned on behalf of MCI to investigate this accident?
A Yes.
MS. DORMAN: Object to form.

Q (BY MS. RODRIGUEZ) All right. So in -- according to Mr. Hoogestraat, vice president of engineering for MCI, there has been sufficient and complete testing on behalf of MCI to investigate this accident. Is that a true statement?
MS. DORMAN: Object to form.
A At this time, we have investigated everything we have -- we've seen appropriate.
Q (BY MS. RODRIGUEZ) Let's talk a little bit about a driveshaft. Would you agree that a driveshaft, it's a mechanical system, right?
A Correct.
Q Do mechanical systems fail?
A They can, yes.
Q Fail for a multitude of reasons, including driveshafts, right?
MS. DORMAN: Object to form.

0014

A Well, a driveshaft can -- can fail. They're a mechanical item that requires lubrication and there's bearings. There's moving parts. They can fail.
Q (BY MS. RODRIGUEZ) They can fail for multiple reasons, true?
A There's other -- there's reasons it can fail. There's multiple reasons for anything to fail.
Q And so you would agree then that it's foreseeable to MCI that a driveshaft could come disconnected from the transmission end on a bus, right?
MS. DORMAN: Object to form.
A If the driveshaft is not maintained, it can -- it could fail. It's a mechanical device.
MS. RODRIGUEZ: Objection, nonresponsive.
Q (BY MS. RODRIGUEZ) Would you agree with me that the loss of a driveshaft is a foreseeable event -- for whatever reason the loss is caused, it's a foreseeable event to MCI?
A It can happen, yes.
Q And driveshaft guards are used to contain a flailing driveshaft. You would agree with that, correct?
MS. DORMAN: Object to form.
A You can have a driveshaft guard is there to -- to protect some of the areas where the driveshaft if it comes disconnected.

0015

Q (BY MS. RODRIGUEZ) Yeah. Because you don't want it flailing about under a bus, do you?
MS. DORMAN: Object to form.
A You mean if it's broke?
Q (BY MS. RODRIGUEZ) Yeah. If it's broken on the differential end, it's -- I mean the transmission end, still connected on the differential end. Or either way. It's a --
A Either way.
Q You don't want it flailing about, right?

MS. DORMAN: Object to form.
A Prefer it not be flailing. That -- that's certainly true.
Q (BY MS. RODRIGUEZ) Mr. Hoogestraat, have you ever laid your hands on a driveshaft and picked one up?
A Yes.
MS. DORMAN: Object to form.
Q (BY MS. RODRIGUEZ) It's heavy, isn't it?
A Yes, it is.
Q About how many pounds does a driveshaft weigh?
MS. DORMAN: Object to form.
A Depends on the length. It could be 70, 80 pounds. Could be more.
Q (BY MS. RODRIGUEZ) Okay. Now, one of the things that a driveshaft guard does is it contains the

0016

energy created by a flailing driveshaft. You understand that as an engineer, right?
MS. DORMAN: Object to form.
A Driveshaft guard can -- if it comes loose can -- can support the driveshaft. That's correct.
Q (BY MS. RODRIGUEZ) Because you want to contain the energy that's created by a flailing driveshaft, something that's 70 or more pounds, correct?
MS. DORMAN: Object to form.
A A driveshaft guard, if it comes loose, is to -- is to restrain the movement -- restrain the movement of the driveshaft flailing. That's correct.
Q (BY MS. RODRIGUEZ) Because the movement is creating energy under there, correct?
MS. DORMAN: Object to form.
A No, it doesn't create energy.
Q (BY MS. RODRIGUEZ) Well, the energy's created by the flailing driveshaft. You would agree with that, correct?
MS. DORMAN: Object to form.
A Well, the flailing -- the driveshaft whipping around has energy. That's correct.
Q (BY MS. RODRIGUEZ) All right. Now, a driveshaft guard -- excuse me. A driveshaft has two things on the end that a jury's going to see in this case

0017

and they're called yokes, correct?
MS. DORMAN: Object to form.
A Yes. And both ends have a yoke.
Q (BY MS. RODRIGUEZ) Have you ever heard of the yoke ends being referred to as ears?
A I personally have not.
Q All right. But you would agree that a driveshaft guard allows the yoke to rotate freely without hitting anything. That's -- that's the ideal purpose --
MS. DORMAN: Object --
Q -- or goal, correct?
MS. DORMAN: Object to form.

A The driveshaft -- excuse me. Could you repeat that?
Q (BY MS. RODRIGUEZ) Sure.
You want to make sure that you have a driveshaft guard so that the yokes aren't hitting anything and the driveshaft's contained if it comes loose on one end, right?
MS. DORMAN: Object to form.
A No. The driveshaft guard is -- is intended so that the driveshaft cannot go through the passenger floor or go into the ground.
Q (BY MS. RODRIGUEZ) That's the only reason according -- that you know of, Mr. Hoogestraat?

0018

A It is --
MS. DORMAN: Object to form.
A -- not to protect every metal part around it.
Q (BY MS. RODRIGUEZ) You started this deposition saying it was to protect the component parts around it, didn't you?
MS. DORMAN: Object to form.
A I may have. But I'm saying predominantly what the driveshaft guard is to protect it from the driveshaft going through the floor or into the ground. It's not every metal part.
Q (BY MS. RODRIGUEZ) Certainly safety-critical parts --
MS. DORMAN: Object to --
Q -- right?
MS. DORMAN: -- form.
A Yes.
(Exhibit 1 marked)
Q (BY MS. RODRIGUEZ) All right. I'm going to hand you what I've marked as Exhibit 1. Do you remember that exhibit, Mr. Hoogestraat?
A Yes.
Q We talked about that at your earlier deposition, correct?
A Yes.

0019

Q And isn't it true that MCI put no driveshaft guard on the transmission end of the Americanos bus?
MS. DORMAN: Object to form.
A It -- the yoke or the tag axle suspension part acts as the driveshaft guard.
Q (BY MS. RODRIGUEZ) Well, when I asked you to label and name each one of those pieces, you didn't call it a guarding structure at your deposition, did you?
A No. I called it a tag axle suspension support as I -- as I just called it.
Q Well, let's talk about what MCI maintenance manual calls it.
(Exhibit 2 marked)
Q Here, I'll hand you what I've marked as Exhibit

2 to your deposition. Do you recognize this as part of the 102DL3 maintenance manual?
MS. DORMAN: Other than it being the wrong year.
MS. RODRIGUEZ: You produced it. Are you producing irrelevant information now?
MS. DORMAN: No. I produced information responsive to your overly-broad requests.
MS. RODRIGUEZ: Well, you need to stick to your objections under the rule. It's objection, form.
MS. DORMAN: You asked me a direct

0020

question. I -- I answered it.
MS. RODRIGUEZ: No. You side -- object to sidebar.
You volunteered that information to coach your witness.
Q (BY MS. RODRIGUEZ) Do you need help finding it, Mr. Hoogestraat?
A No, I found it.
Q All right. What does the MCI maintenance manual say -- call -- call that structure?
A Calls it the way it looks to me like the latch arm assembly.
Q Can I have that document back?
A Well, let me complete looking at it.
Q Is that the first time you've seen this in a while, Mr. Hoogestraat?
MS. DORMAN: Object to form.
A No. I've seen it.
Q (BY MS. RODRIGUEZ) Are you studying that or do you need to familiarize yourself with the tag axle assembly?
A No.
MS. DORMAN: Object to form.
A I'm just looking --
Q (BY MS. RODRIGUEZ) Okay.

0021

A -- at it --
Q All right.
A -- if you don't mind.
Q No, I don't mind. I just...
And to clear up any concerns that Ms. Dorman might have about the terminology, let's go ahead and mark Exhibit 3, which is the '94 102DLC -- 102DL3 parts manual.
(Exhibit 3 marked)
Q What does that manual call that structure, Mr. Hoogestraat?
MS. DORMAN: May I see it?
Object to form.
MS. RODRIGUEZ: What's the legal basis for your objection?
MS. DORMAN: What does that manual call

that part? It's vague. It's unspecified.
MS. RODRIGUEZ: The legal basis. You can object, vague. You can't coach your witness.
MS. DORMAN: Counsel, if you could moderate your tone a little bit. It's going to be a very long day if you continue to be abusive to the witness and to me.
MS. RODRIGUEZ: Don't -- don't coach your witness then. Stick by the Rules.
MS. DORMAN: I'm not coaching the witness.

0022

A As I read it, it says arm assembly latch.
Q (BY MS. RODRIGUEZ) Same thing, right, Mr. Hoogestraat?
A It's the same pocket, yes.
(Exhibit 4 marked)
Q All right. And then when I asked you to identify -- we'll mark it as Exhibit 4 -- this structure, you called that --
MS. DORMAN: Object to form.
Q (BY MS. RODRIGUEZ) -- the driveshaft safety guard, correct?
A Uh-huh.
Q Is -- is that a yes?
A Yes.
Q I don't mean to get after you, but I just need to make sure that you and I both have a clear answer. So if you say things like uh-huh or huh-uh, I'll ask you if that's a yes. And I don't --
A That's okay.
Q Okay.
A I'm not -- yeah. That's what I called it.
Q All right. So it wasn't until you wrote your report in this lawsuit that you started calling that tag axle suspension support a guarding structure; isn't that true?

0023

MS. DORMAN: Object to form.
A What I said is -- if I recall correctly, is that it protects the driveshaft if it comes loose because the driveshaft comes through it.
Q (BY MS. RODRIGUEZ) No. When I asked you what that was and when I asked you where the driveshaft loop was, you never referred to the tax axle suspension support in your first deposition as a driveshaft guard or containment or guarding structure. Isn't that true, Mr. Hoogestraat?
A That's true.
MS. DORMAN: Object to form.
A I did not say that, but what I'm trying to say is that it helps contain driveshaft should it come loose.
MS. RODRIGUEZ: Objection, nonresponsive after the word "true."
Q (BY MS. RODRIGUEZ) Now, MCI designed the safety guard because it's required to do so. You told us that

in your first deposition, right?
MS. DORMAN: Object to form.
A We supply one.
Q (BY MS. RODRIGUEZ) Well, MCI designed the driveshaft safety guard because it's required, right?
MS. DORMAN: Object to form.
A Required?

0024

Q (BY MS. RODRIGUEZ) Your words, Mr. Hoogestraat. Would you like for me to refresh your memory?
A Yes, please.
Q Do you remember giving a deposition in this case on June 9th --
A Yes.
Q -- of this year?
A Yes.
Q Do you remember me asking you about those types of questions?
A Yes.
MS. DORMAN: Object to form.
A I remember questions.
Q (BY MS. RODRIGUEZ) All right. Then I'll refer you to -- and I'll mark it -- I'll mark this as Exhibit 5 to your deposition today.
(Exhibit 5 marked)
Q We're looking at page 177, line 16 of your deposition.
Question: That driveshaft guard, was that something that was designed and manufactured by MCI?
Answer: It was designed by MCI. I don't know who manufactured it.
Question: Why did MCI design the driveshaft safety guard?

0025

Answer: It's required.
Does that refresh your memory, Mr. Hoogestraat?
MS. DORMAN: Let me see.
A Yes.
Q (BY MS. RODRIGUEZ) Do you stand by that answer today?
A Yes. It's required by MCI.
Q Required because MCI's required to design and manufacture buses that meet the Federal Motor Carrier Safety Administration regulations for the operators who are going to be operating those buses, correct?
MS. DORMAN: Object to form.
A Motor carrier is for the operators. We operate under FMVSS standard.
Q (BY MS. RODRIGUEZ) So is it required under the -- under the FMVSS standard?
A No.
MS. DORMAN: Object to form.
Q (BY MS. RODRIGUEZ) When you said it was

required, what did you mean?
A It's required by MCI.
Q Why does MCI require it on all of its buses?
A We always have required it. It -- it was required before it even came to MCI.

Q Do you even know why it's required, Mr. Hoogestraat?
MS. DORMAN: Object to form.
A As I stated previously, the guard, if you -- if the driveshaft comes loose at the differential, the driveshaft can go down and strike the ground and you get a cata-- a catapulting effect. And that's why it's required.
Q (BY MS. RODRIGUEZ) So is MCI in the business of manufacturing buses that don't even meet the regulations that apply to its operators, its customers?
MS. DORMAN: Object to form.
A No. We are required to meet FMVSS standards.
MS. RODRIGUEZ: Objection, nonresponsive.
Q (BY MS. RODRIGUEZ) My question to you is: Is your company in the business of manufacturing and selling buses that don't even meet the requirements that -- of -- required for the customers that it's selling to?
A As far --
MS. DORMAN: Object to form.
A -- as we know, we are.
Q (BY MS. RODRIGUEZ) All right. That's a good business practice, isn't it, Mr. Hoogestraat?
MS. DORMAN: Object to form.
A Is that a question?

Q (BY MS. RODRIGUEZ) Yeah. Is that -- do you agree that that's a good business practice?
A Yes.
Q All right. Let's talk about the driveshaft loops. Let's look at, for example, the one on the Americanos bus, Exhibit 4 to this particular deposition.
As an engineer, do you have any understanding of why driveshaft -- driveshaft loops have a small radial opening?
MS. DORMAN: Object to form.
A Small radial opening is to retain it as -- as practically as possible.
Q (BY MS. RODRIGUEZ) Why -- why would you want to do that? Why not just make it a big -- big as loop as possible?
MS. DORMAN: Object to form. Asked and answered.
A We're trying to minimize -- if it broke the minimized amount of damage it could cause.
Q (BY MS. RODRIGUEZ) Well --
A That's -- that's practical.
Q And to damage, you're referring to the damage

around where the driveshaft breaks, right?
MS. DORMAN: Object to form.
A To the extent practical, that's correct.

0028

THE REPORTER: I'm sorry. What?
THE WITNESS: To the extent practical, that's correct. Yes.
Q (BY MS. RODRIGUEZ) Do you have any idea of the size of that opening of the driveshaft?
A Guard?
Q On -- on the Americanos bus, yes, as you've seen in Exhibit 4.
A Do I have the dimensions here?
Q Yes, sir.
A Not with me, no.
Q Oh, you took those dimensions?
MS. DORMAN: Object to form.
A No, I did not take those dimensions. I said the dimensions are on the drawing. I don't have that drawing here.
Q (BY MS. RODRIGUEZ) Okay. But you know that that loop is identical to the -- the dimensions are identical to the dimensions on an MCI drawing, correct?
MS. DORMAN: Object to form.
A I have no reason to believe that it's different.
Q (BY MS. RODRIGUEZ) All right. Well, let's take a look since you didn't measure it. Let's look at some measurements.
(Exhibits 6 and 7 marked)

0029

Q We've got Exhibit 6 and 7. Are you able to glean the dimensions of that driveshaft loop from those two exhibits, sir?
A One on the inside dimension's roughly 10 and the other one's roughly 8. It's difficult to tell because we -- he measured from the outside to the inside, so it's a little bit different, but roughly.
Q Are you talking in terms of inches?
A That's what it looks like he's using, an inch scale.
Q What would the radial opening be then?
MS. DORMAN: Object to form.
A Well, it's 10 then -- 10 and then narrows to a roughly 8. What do you mean by radial opening? I'm not sure I understand your --
Q (BY MS. RODRIGUEZ) What's the --
A -- your statement.
Q -- radius -- what's the radius of the opening of the -- within the inside of the loop?
A It's about --
MS. DORMAN: Object to form.
A -- 4 inches on the radius roughly, but it is not through a radius since the height is -- is a little bit more than its width.

Q (BY MS. RODRIGUEZ) Did you measure the -- the
0030
dimensions of the tag axle support -- suspension support?
MS. DORMAN: Object to form.
A I looked at them.
MS. RODRIGUEZ: Objection, nonresponsive.
Q (BY MS. RODRIGUEZ) Mr. Hoogestraat, on the
Americanos bus, did you or did you not measure the tag
axle support -- suspension support dimensions?
A No, I did not.
Q You have no idea how large that opening is, do
you?
MS. DORMAN: Object to form.
A I know how large it is by drawing.
Q (BY MS. RODRIGUEZ) How large is it? Tell us,
please.
A I don't have --
MS. DORMAN: Object to form.
A -- the drawing here. I don't recall off the top
of my head.
Q (BY MS. RODRIGUEZ) Was it something you
considered in your opinions?
MS. DORMAN: Object to form.
A In my opinion for -- in regard to -- I don't
understand the question.
Q (BY MS. RODRIGUEZ) Thank you for letting me
know.
0031
You do realize that the third time I'm here
to take your deposition is because you've been designated
by your lawyer as an expert on behalf of MCI, correct?
A Yes.
Q Are you prepared to give testimony on your
expert opinions in this case?
A Yes.
Q And did you prepare for this deposition?
A Yes.
Q And you don't know what the measurement is of
the opening of the tag axle suspension support, correct?
MS. DORMAN: Object to form.
A Not off the top of my head, no, I do not.
Q (BY MS. RODRIGUEZ) You never looked it up, did
you, Mr. Hoogestraat?
A I looked --
MS. DORMAN: Object to form.
A -- it on a drawing.
Q (BY MS. RODRIGUEZ) When did you do that?
A About a month or so ago.
Q You didn't think that maybe you needed to do it
in preparation for your deposition today? That didn't
cross your mind?
A No --
MS. DORMAN: Object to form.
0032

A -- it did not.
Q (BY MS. RODRIGUEZ) But yet, you're giving opinions on the dimensions of this bus and whether a driveshaft can escape from that tag axle suspension support; isn't that true?
A That's true.
Q You've been under other buses by -- manufactured by other bus manufacturers, have you not?
A Yes.
Q You know Van Hool. Have you ever been under one of their buses?
A I'm sure I have.
(Exhibit 8 marked)
Q All right. Let me hand you what I've marked as Exhibit 8.
MS. DORMAN: Let me see.
THE REPORTER: Mr. Hoogestraat, could you pause for a second after her question so she can get her objection in so --
THE WITNESS: Oh, okay.
THE REPORTER: -- y'all aren't --
THE WITNESS: I'm sorry.
THE REPORTER: Thank you.
Q (BY MS. RODRIGUEZ) Do you have any idea what that -- what you think that is?

0033

MS. DORMAN: Object to form.
A Well, it's obviously a driveshaft.
Q (BY MS. RODRIGUEZ) Do you see anything in that picture, maybe two driveshaft containing loops?
A There are two driveshaft guards in there.
Q What do the Van Hool engineers know that the MCI engineers don't know about why there should be two driveshaft containing loops? Do you know?
MS. DORMAN: Object to form.
A Well, maybe it's because they mounted the -- looks like a brake component right next to the driveshaft.
Q (BY MS. RODRIGUEZ) And you would never want a safety-critical component right next to the driveshaft unprotected because it's foreseeable a driveshaft can disconnect and flail, correct?
MS. DORMAN: Object to form.
A It's foreseeable that a driveshaft could fail at some point. That's true.
Q (BY MS. RODRIGUEZ) And that's why you think maybe Van -- the Van Hool engineers didn't want a flailing driveshaft next to a brake component, correct?
MS. DORMAN: Object to form.
A I'm speculating, but that would be one consideration they may have had.

0034

Q (BY MS. RODRIGUEZ) Well, it's sound engineering not to put an unprotected driveshaft next to a

safety-critical component on a bus, correct?
MS. DORMAN: Object to form.
A I'm -- you're asking me -- you showed me a picture. I said that looks like a brake component and I assume that's why they put the driveshaft guard there.
MS. RODRIGUEZ: Objection, nonresponsive.
Q (BY MS. RODRIGUEZ) I'm asking you as an expert engineer in this case, Mr. Hoogestraat. Is it reasonable and sound engineering to put a protected driveshaft next to a safety-critical component?
A Yes.
MS. DORMAN: Object to form.
Q (BY MS. RODRIGUEZ) That's sound engineering, isn't it?
A Yes, it is.
MS. DORMAN: Object to form.
Q (BY MS. RODRIGUEZ) Mr. Hoogestraat, can we agree that the loss of a driveshaft should not be a catastrophic eve-- event?
MS. DORMAN: Object to form.
A Could you define catastrophic?
Q (BY MS. RODRIGUEZ) People die.
MS. DORMAN: Object to form.

0035

A We would not like people to die in any event.
Q (BY MS. RODRIGUEZ) Well, would you agree with me, Mr. Hoogestraat, as an expert engineer that the loss of a driveshaft in a bus, that shouldn't result in a bus rolling over? Would you agree with that?
MS. DORMAN: Object to form.
A I would hope it would not. Yes.
Q (BY MS. RODRIGUEZ) You wouldn't expect as an engineer for that to happen, would you?
MS. DORMAN: Object to --
A No. I would --
MS. DORMAN: -- form.
A -- hope not.
Q (BY MS. RODRIGUEZ) I'm not asking about your hope. I'm asking as an engineer, what are your expectations?
A We would try --
MS. DORMAN: Object to form.
A -- not to have that occur. That's true.
Q (BY MS. RODRIGUEZ) And it's -- you would also not expect people to die as a result of a loss of a driveshaft on a bus --
MS. DORMAN: Object to --
Q -- isn't that true?
MS. DORMAN: -- form.

0036

A We certainly would not want that to occur. Yes.
MS. RODRIGUEZ: Objection, nonresponsive.
Q (BY MS. RODRIGUEZ) I'm not asking what you want, Mr. Hoogestraat. I'm here to take your deposition

as an engineer.
As an engineer, you don't expect people to die as a result of just the loss of a driveshaft?
MS. DORMAN: Object to form.
A Is -- are -- is it -- unless they're underneath the bus where we cannot contr-- control it, no, we would not expect people to die.
Q (BY MS. RODRIGUEZ) You're giving causation opinions in this case; isn't that true?
A You asked me a question, a very broad question. And I'm just saying if the -- if -- going down the road, we would not expect that.
Q Mr. Hoogestraat, have you or have you not given causation opinions in your expert report in this case?
A Yes.
Q So my question to you is: As -- you would not expect passengers inside a bus to lose their life, to die as a result of the loss of a driveshaft on a bus?
A Yes.
MS. DORMAN: Object to form.
Q (BY MS. RODRIGUEZ) Is that true?

0037

A That's true.
Q All right. Mr. Hoogestraat, do you have an opinion whether a partially disconnected driveshaft can impact a tie rod in a 10DL -- 102DL3?
MS. DORMAN: Object to form.
A I do not think it -- that it can hit the drive -- the tie rod.
Q (BY MS. RODRIGUEZ) Okay. So you do have an opinion and it's your opinion that a partially disconnected driveshaft cannot hit a tie rod in a 102DL3. Did I state that correctly?
MS. DORMAN: Object to form.
A I have not seen that it can do that.
Q (BY MS. RODRIGUEZ) Well, I'm asking for your opinion in this case.
A My opinion is it cannot hit it.
Q All right. And what is the basis for that opinion, Mr. Hoogestraat?
A The basis is the -- the -- the transmission end is retained within the suspension support and that it cannot drop down and hit the tie rod.
Q So your entire opinion is based on the fact that you believe that the driveshaft cannot escape the containment created by the tag axle suspension support, correct?

0038

A Going down the road.
Q And how did you arrive at that opinion or conclusion?
A I looked at the dimensions of the driveshaft and how far it goes into the suspension support. And then we also looked at a bus in Los Alamitos and see if there's a

way it could come out of there and how it would come out of there. And could it drop down.
Q All right. So I understand that you base your opinion on looking at the dimensions of the driveshaft on the Americanos bus and how far it went into the suspension support, correct?
A Yes.
Q And you looked at an exemplar bus at the MCI facility in Los Alamitos, California?
A Yes.
Q Did you do anything else, Mr. Hoogestraat, to arrive at the opinion that it is impossible for a driveshaft to hit a tie rod when it disconnects at the transmission end on a 102DL3?
A I -- as I said, I went through all the dimensions, physical dimensions on the drawings at the -- and I could not see where it would come out of the tag axle suspension support. Then we went to Los Alamitos and tried to look at if there's something we did not -- I

0039

did not look at. And that's where I came to that conclusion.
Q All right. So let me recap so I make sure I understand.
You're basing your entire opinion that a disconnected driveshaft on the transmission end cannot hit a tie rod on the fact that you looked at MCI drawings, you looked at the dimensions of the driveshaft on the Americanos bus and how far it went into the suspension support and you looked at an exemplar bus in Los Alamitos, California at the MCI facility. Is that a true statement?
A At this time, yes.
Q When did you look at those drawings to try to make that determination?
A Oh, that was quite some time ago. That was before the first deposition.
Q Right before the first deposition when I asked for the drawings?
A No. That was long -- it was before that. I don't remember when. It was quite a while ago.
Q And would it be fair to say that in looking at the drawings, the intent of MCI was that the driveshaft would not escape the tag axle suspension support if it disconnected at the transmission end?

0040

A Well, when I looked at the drawings, I looked at the drawings to see if it could escape. Like I told you in the first deposition, when the bus was designed, I was not working on this vehicle at that time, so I cannot answer what was the intent back in '92.
Q So you don't know if the tag axle suspension support was ever intended to be a driveshaft containing structure as you're now calling it?

MS. DORMAN: Object to form.
Q (BY MS. RODRIGUEZ) Is that true? Is that what you're telling me?
MS. DORMAN: Object to form.
A What I'm telling you, as I said before, is the structure of the suspension support is it acts like a guard for the -- for the driveshaft.
MS. RODRIGUEZ: Objection, nonresponsive.
Q (BY MS. RODRIGUEZ) Mr. Hoogestraat, did MCI intend when they designed this bus for the tag axle suspension support to be a contain-- driveshaft containing structure?
A As I --
MS. DORMAN: Object to form.
A -- stated previously, that was back in '92 and I was not working on this bus back in '92, so I cannot answer what their thought was back in 1992.

0041

Q (BY MS. RODRIGUEZ) So you don't know if MCI even ever intended for the tag axle suspension support to serve as a driveshaft containing structure; is that true?
A Back in --
MS. DORMAN: Object to form.
A -- '92, I don't know.
Q (BY MS. RODRIGUEZ) Okay. But you look -- after this accident, you pull out the drawings and you look at it and you say, h'm, I wonder if that tag axle suspension support would contain a driveshaft. Is that what you did?
MS. DORMAN: Object to form.
A I looked at the drawings and see if it -- if the driveshaft would come out of there. That's correct.
Q (BY MS. RODRIGUEZ) And how -- what -- how did you look at the drawings if the drawings were -- well, let me back up.
Were the drawings of the tag axle assembly?
MS. DORMAN: Object to form.
A Well, there's numerous drawings of the tag axle. There's a drive axle, the tag axle, the driveshaft, the transmission. And you take a look at the dimensions.
Q (BY MS. RODRIGUEZ) And so you would have looked at the drawings for every single configuration possible for an MCI 102DL3?

0042

A No. I looked at the specific arrangement.
Q What is that?
A It has -- this happens to have a Series 60 engine -- engine with a 740 transmission.
(Exhibit 9 marked)
Q Let me hand you what I've marked as Exhibit 9. Do you recognize this document?
MS. DORMAN: If you could hand it to me.
A Yes.
Q (BY MS. RODRIGUEZ) What is that?

A This is the final vehicle record.
Q On what bus?
A This bus. It's the bus in question. Unit number 46918.
Q And that confirms what you told us, that the bus involved in this accident, the Americanos bus, had an Allison HT-740 transmission, correct?
A HT-740D. That's correct.
Q All right, sir. And does it tell you what kind of engine it had?
A Yeah. Series 60.
Q Okay. Let's go back to your -- the basis for your opinions. You said you looked at an exemplar bus in Los Al-- Los Alamitos, California, the MCI facility, correct?

0043

A Yes.
Q When did you do that, Mr. Hoogestraat?
A I don't remember the exact date. I'm sure I can -- it's in these records.
Q What records?
A The ones provided here. I'm sure it's on one of these disks. I don't remember the exact date.
Q Well, here's your records. I need that date.
MS. DORMAN: Let me see what you've gone through so far.
Have you already marked his report?
MS. RODRIGUEZ: No, but I have it. Do you need it?
MS. DORMAN: Well, I thought it was in this stack at the top. I'm thinking that's where it might be.
THE WITNESS: It's with Bob Rucoba's pictures.
MS. DORMAN: Oh, those are on a disk.
THE WITNESS: That's what I said. I think it's on a disk, but...
MS. RODRIGUEZ: Can you get the computer out, Imelda?
MS. DORMAN: Let me see these. Let me see your report if it's...
THE WITNESS: May be in the report.

0044

MS. DORMAN: It was on top this morning. Here's another copy of your report.
A Ah. August 2nd, 2011.
Q (BY MS. RODRIGUEZ) Oh, so you didn't bother looking at an exemplar coach until a couple of months ago, right?
MS. DORMAN: Object to form.
A I've looked under -- as I stated previously, I've looked underneath DLs a lot of the times over the years. I don't know what you mean by look at exemplar bus.
Q (BY MS. RODRIGUEZ) Your words. Did you not use

an exemplar bus in your report --
A Yes.
Q -- sir?
A Yes. Yes. That's --
Q All right.
A -- when I looked at that.
Q Okay.
A But I've looked at DLs over the years many, many times.
Q Well, when you looked at this particular bus at the MCI facility in California, you were looking at it for the sole purpose of determining whether the driveshaft could impact the tie rod if it escaped from

0045

the tag axle suspension support, correct?
MS. DORMAN: Object to form.
A As I said earlier, I looked at the dimensions and it looked to me like it could not come out. And then we went and looked at this bus and then to -- to look at and see if there's something I missed in evaluating the dimensions of it coming out.
Q (BY MS. RODRIGUEZ) All right. So the purpose of you looking at that bus out in California was to find out if the driveshaft could hit the tie rod if it escaped the tag axle suspension support?
MS. DORMAN: Object to form.
A No. That was not the number one reason. The number one reason is how the driveshaft could come out. And then we were also looking at did it -- could it also if it -- if it came out of that -- the suspension support, could it hit the tie rod and under what circumstances could it do that.
Q (BY MS. RODRIGUEZ) All right. And tell us a little bit about that bus in California at the MCI facility. Where's your notes on that inspection, by the way?
A I have no notes on my inspection.
Q You don't usually take notes when you do inspections?

0046

A No. We took pictures. There were pictures taken.
Q Okay. And you had an expert out there with you?
A Yes.
Q Were you helping him with understanding the underneath of the bus or did you need help or...
MS. DORMAN: Object to form.
Q (BY MS. RODRIGUEZ) Let me rephrase the question.
Why'd you have an expert there with you, Mr. Hoogestraat?
A He was looking at sim-- similar thing that I was looking at.
Q Certainly you talked about your findings and his

findings while you're doing that inspection, correct?
A Most what we were doing is looking at the -- taking off the driveshaft, looking at the various made of where the driveshaft -- if you collapsed the driveshaft, what would -- where could it come out of that vehicle was the primary purpose, as I said.
And then the second part of that was if -- how far it collapsed and if it -- could it possibly come -- come down and hit the tie rod.
Q Okay.
A That was one of the paths of it possibly coming

0047

out.
MS. RODRIGUEZ: Objection, nonresponsive.
Q (BY MS. RODRIGUEZ) Mr. Hoogestraat, my question was: Did you talk about your findings during the inspection with the expert?
A I'm sure we spoke. That's true.
Q All right. You didn't try to influence his opinions in any ways by talking to him about your findings, did you?
A No. We were working on taking out the driveshaft and -- and handling the driveshaft in various ways, but I was not trying to influence him at all.
Q Why don't you tell us what the engine and transmission configuration was on the exemplar bus?
A That was a B-500 on a Series 60.
Q Did anyone at MCI or on behalf of MCI do any testing to determine if a driveshaft can -- disconnects at the transmission end whether it can hit a tie rod, other than your looking at the exemplar bus out in California?
A Not that I'm aware of.
Q Then how do you know that the tag axle suspension support is an efficient containment system on a driveshaft --
MS. DORMAN: Object to form.

0048

Q -- if it wasn't tested?
MS. DORMAN: Object to form.
A Well, it can't just -- the -- if it cannot come out -- I don't know by -- what you mean by efficient. I mean, if it serves the purpose, then I guess that's efficient. But it -- dimensionally, it looks to me like it cannot come out of there.
Q (BY MS. RODRIGUEZ) Do you have an opinion whether a partially disconnected driveshaft at the transmission end will unlock the tag axle on a 102DL3?
A If it cannot come out of the suspension part, it cannot unlock it.
Q So in Mr. Hoogestraat's expert opinion in this case, a driveshaft disconnected at the transmission end cannot unlock the tag axle on a 102DL3. Did I state that correctly?

A The driveshaft if --
MS. DORMAN: Object to form.
A The driveshaft contained within a suspension support cannot hit the tag axle unlock and unlock it.
MS. RODRIGUEZ: Objection, nonresponsive.
Q (BY MS. RODRIGUEZ) Mr. Hoogestraat, it's a yes-or-no question. Do you have an opinion whether a driveshaft disconnected at the transmission end can impact -- excuse me -- can unlock the tag axle in a

0049

102DL3?
MS. DORMAN: Object to form.
A Disconnected at the transmission end?
Q (BY MS. RODRIGUEZ) Yes, sir.
A It cannot.
Q Okay. And is the basis for your opinion that a driveshaft disconnected at the transmission end cannot unlock the tag axle in a 102DL3 the same basis that you gave me for your opinion that the driveshaft cannot impact a tie rod?
MS. DORMAN: Object to form.
A I have not found where the driveshaft can impact the tie rod.
Q (BY MS. RODRIGUEZ) But, I mean, in terms of reaching that conclusion about unlocking the tag axle, do you base that opinion on your looking at the dimensions of the driveshaft on the Americanos bus and how far it went into the suspension support, looking at the exemplar bus at the MCI facility last August and looking at the drawings for a 102DL3?
A Yes.
Q Anything else to support that opinion that a driveshaft disconnected at the transmission end cannot unlock a tag axle on a 102DL3?
A And the fact that the tag axle lock is below the

0050

tie rod, it cannot unlock it.
Q Can't even -- the driveshaft can't even hit that tag axle lock, right, as far as you know?
A As far as I've --
MS. DORMAN: Object to form.
A -- considered, it doesn't hit it.
Q (BY MS. RODRIGUEZ) Okay. Did anyone at MCI or on behalf of MCI do any testing to find out if a driveshaft disconnects at the transmission end whether it can unlock the tag axle?
MS. DORMAN: Object to form.
A Any testing?
Q (BY MS. RODRIGUEZ) Yes, sir.
A Not that I'm aware of.
Q MCI didn't test what would happen if a driveshaft failed at the transmission end in a 102DL3 before it started selling the 102DL3s --
MS. DORMAN: Object to form.

Q -- to the public?
MS. DORMAN: Object to form.
A As I stated previously, that was back in 1992. I don't know if they did it back then or not.
Q (BY MS. RODRIGUEZ) Did you at least do the research, Mr. Hoogestraat, to find out if you could find any testing?

0051

A I did not find any --
MS. DORMAN: Object to form.
A -- testing in that regard.
Q (BY MS. RODRIGUEZ) You did the research though, didn't you?
A I looked --
MS. DORMAN: Object to form.
A -- through the test reports. I did not see a test report in that regard.
Q (BY MS. RODRIGUEZ) And MCI still hasn't tested what happens if a driveshaft fails in a 102DL3; isn't that true?
MS. DORMAN: Object to form.
A I am not aware of any test like that.
Q (BY MS. RODRIGUEZ) Are you aware of any validation testing done by MCI of the ability or the effectiveness of the latch arm assembly to contain a detached driveshaft at the transmission end?
MS. DORMAN: Object to form.
A I am not aware of any testing that MCI has done in that regard.
Q (BY MS. RODRIGUEZ) Are you aware that an -- an engineer that MCI has used in the past has concluded that when a driveshaft fails at the transmission end on a 102DL3, it can unlock a tag axle?

0052

MS. DORMAN: Object to form.
Q (BY MS. RODRIGUEZ) Were you aware of that?
A If you're referring to Aaron Jones, he has that opinion.
Q Were you aware that was his opinion?
A I read it.
Q And MCI's used Mr. Jones for his engineering expertise in the past, correct?
A They have in some things, yes.
Q Do you know Mr. Jones?
A I know him when I meet him.
Q Okay. Do you know if he's a good engineer?
MS. DORMAN: Object to form.
Q (BY MS. RODRIGUEZ) Do you consider him to be a good engineer?
MS. DORMAN: Object to form.
A I have no opinion of Mr. Jones.
Q (BY MS. RODRIGUEZ) Did you deal with him when he did engineering work for MCI?
A He was doing mostly metallurgical stuff that I

was involved with him on.
MS. RODRIGUEZ: Objection, nonresponsive.
Q (BY MS. RODRIGUEZ) Did you deal with Mr. Jones when he was doing engin-- engineering work for MCI?
MS. DORMAN: Object to form.

0053

A Yes.
Q (BY MS. RODRIGUEZ) Did you find him to be qualified and capable in the work that he was performing?
MS. DORMAN: Object to form.
A The work -- as I stated previously, the work he was performing, he -- we brought him in for some corrosion work, which is more metallurgical. He did -- he did that -- he did fine in that work.
Q (BY MS. RODRIGUEZ) He never did any failure mode effects analysis for MCI?
MS. DORMAN: Object to form.
A Not that I was involved with.
Q (BY MS. RODRIGUEZ) All right. You found him to be honest though, didn't you?
MS. DORMAN: Object to form.
A He was honest on that metallurgical work, yes.
Q (BY MS. RODRIGUEZ) Well, if Ms. Dorman has suggested in his deposition that he was unethical, you would -- that's not the Aaron Jones you know, is it?
MS. DORMAN: Object to form.
A As I stated previously, the work that I was involved with Aaron Jones was on metallurgical work. We were looking at a corrosion problem and he did -- he did fine in that work. That's what we asked him to do and that's what he did.

0054

Q (BY MS. RODRIGUEZ) Well, I'm asking you another question, Mr. Hoogestraat. If Ms. Dorman has suggested in Mr. Jones' deposition that he's unethical, that's not the Aaron Jones you know, is it?
MS. DORMAN: Object to form.
A What I'm trying to say is he was not unethical in the work we asked him to do that I was involved with.
Q (BY MS. RODRIGUEZ) Now, let me ask you this. After you as vice president of engineering design for MCI became aware of that opinion, did MCI test a driveshaft to see if Mr. Jones was right or wrong?
MS. DORMAN: Object to form.
A As stated previously, we have not done that.
Q (BY MS. RODRIGUEZ) Didn't you -- as a vice president of engineering for MCI, didn't you want to know if it was possible for a driveshaft to hit a tie rod and unlock a steerable tag axle?
A I stated previously I don't see how it's -- it is possible for it to do that. And unless there's some reason to believe that, I -- I would not ask for that testing to be done.
Q So you never asked Mr. Nalepka or anybody at

MCI: Hey, Mr. Jones has come up with this opinion, guys. Let's test this and find out who's right. Are we right or is he right?

You never did that?

A I did --

MS. DORMAN: Object to form.

A -- not do that.

Q (BY MS. RODRIGUEZ) And it would have been as simple as motoring the engine and allowing a driveshaft to disconnect at the transmission end to see if it would stay in that tag axle suspension support, true?

MS. DORMAN: Object to form.

A Just stationary? Is that your question?

Q (BY MS. RODRIGUEZ) Yes. Motoring the engine so that the driveshaft is rotating and allowing it to disconnect at the transmission end to see what happens if it stays within that tag axle suspension support.

A We could have --

MS. DORMAN: Object to form.

A -- done that, yes.

Q (BY MS. RODRIGUEZ) Any reason you didn't do it, Mr. Hoogestraat?

A Because I didn't feel it was necessary.

Q And you didn't feel it was necessary because you can't conceive based on looking at the drawings, the Americanos coach dimensions and the exemplar coach commen-- dimensions that the driveshaft could ever escape the tag axle suspension support, true?

A That's correct.

Q All right. Now let's talk about your report a little bit. And we'll go ahead and mark it as Exhibit 10 to your deposition.

(Exhibit 10 marked)

Q Is that your report, sir?

A Yes.

Q Is your report complete?

MS. DORMAN: Object to form.

A It's complete up to the time that I wrote this report, yes.

Q (BY MS. RODRIGUEZ) Do you want to make any changes to it as you sit here today?

A Not as I sit here today.

Q Do you need to make any corrections to it?

A I don't know of any corrections to it that I want to make today.

Q So you stand by Virgil Hoogestraat's report, the opinions contained in there, Exhibit 10 to your deposition, correct?

A Correct.

Q Now, let's talk about what's on the last page, I believe. Let's talk about your conclusion C, the penultimate page.

A Conclusion C?
0057
Q Yes, sir.
A Okay.
Q You reach conclusion C after looking at the dimensions of the Americanos coach, which by the way doesn't have a driveshaft in it, right?
A Not that I saw. No, it did not.
Q Did you ever connect a driveshaft on the differential end, move it around with your hand to see what -- see if the driveshaft could impact the tie rod or any of the --
A On an Americanos --
Q -- tag lock --
A -- coach?
Q Yes, sir.
A No, I did not.
Q All right. So when you're talking about you -- you looked at the dimensions of the driveshaft, what dimensions specifically on the Americanos coach are you talking about?
MS. DORMAN: Object to form.
A When I'm talking about the dimensions, I'm talk-- as stated previously, talking about the dimensions I took from the drawings. Is that what you're -- I'm not sure I understand your question.
Q (BY MS. RODRIGUEZ) Thank you for letting me
0058
know.
You told me that you looked at the MCI drawings for the Series 60 engine, HT-740 transmission, correct?
A Yes.
Q And then you also told me you looked at the dimensions of the driveshaft and how far it went into the suspension support on the Americanos accident bus, correct?
A No.
Q Okay. So you didn't take any dimensions on the Americanos accident bus --
A No.
Q -- is that --
A That --
Q -- true?
A That's true. What I did is on Americanos' vehicle setup, which is the drawings for the -- with that engine and that transmission, that's what I went through, those drawings on those dimensions.
Q All right. So actually what you did was you looked at the Americanos accident bus. You determined that what we're dealing with here is a Series 60 engine and an HT-740 transmission, correct?
A Yes.
0059

Q And you then took that information and went back to the MCI drawings and you looked at those dimensions, correct?
A Yes.
Q All right. So let's go back to your report. And on page 5 you talked about -- paragraph 6, you talk about your exemplar coach inspection of August 2, 2001 [sic]. Do you --
A Yes.
Q -- see that?
A Yes.
Q Okay. And then on the next page where we just were where you have your findings, are those your findings related to your exemplar coach inspection?
A (Reading) I found the following: With respect to the conditions found during my inspections (detailed above)...
But please ask your question again. I'm -- I'm confused by your question.
Q Sure.
The way I read your report is we're looking at on page 5, paragraph 6 the exemplar coach inspection --
A Yes.
Q -- on August 2, 2011, correct?

0060

A Yes.
Q All right. Then we go to the next page. Are those your findings in general or are those your findings from the inspection?
MS. DORMAN: Object to form.
A I'm not -- I'm not -- are we -- I don't have the next page. I'm -- are you talking A?
Q (BY MS. RODRIGUEZ) Let me see your --
A I'm -- I'm confused by --
Q Okay.
A -- when you say next page.
Q Well, it might be a printing issue, but when I got your report, it -- it prints a little bit different.
MS. RODRIGUEZ: And I'll see if I can find a clean copy of his report that we received from Ms. Dorman.
Q (BY MS. RODRIGUEZ) And we'll go through it and make sure it's the same. I'm sure it's just how it got printed, but you're right. We are on different pages. Well, yours says 5 of 8 and mine says -- mine has 7 pages. And yours has 8 pages.
MS. DORMAN: It's probably a signature page.
Q (BY MS. RODRIGUEZ) Okay. Mr. Hoogestraat, since we appear to have two different reports, let's go

0061

ahead and mark what I was provided by Ms. Dorman as Exhibit 11.

(Exhibit 11 marked)
Q And I'm going to give you 10 back so you can look at it and tell me if they're different.
MS. DORMAN: You know what? That first paragraph on the first page was left off for some reason. Wait. No, no, no. Here it is. Sorry.
MS. RODRIGUEZ: And I'm not asking you to testify if it's different. I'd like the witness to tell us if it's different.
MS. DORMAN: It's just formatting. There you go.
MR. VIDAURRI: Object, nonresponsive. Sidebar.
MS. DORMAN: Only one attorney can object at the deposition and I believe Ms. Rodriguez is the one taking it, so if you wouldn't mind. Thank you.
MR. VIDAURRI: I'm representing a client here.
MS. DORMAN: Yeah, but your partner's taking the deposition, so if you wouldn't mind.
MR. VIDAURRI: I'm representing a client here.
MS. DORMAN: She's taking the deposition.

0062

Do you need me to go get a rule book, sir?
MR. VIDAURRI: I'm -- I'm -- I'm representing a client here.
MS. DORMAN: I understand what you're doing, but she's taking the deposition. Are you familiar with the deposition rules about objecting? I assume you are.
MS. RODRIGUEZ: And he's objecting per the Rules. And you keep coaching.
A They appear to be the same. My opinion is it looks like the font size is a little different.
Q (BY MS. RODRIGUEZ) Okay. Let's work off Exhibit 11. That way we -- you and I are talking about the same pages since --
A Okay.
Q -- you testified they are the same report.
And before we get on to your report too, could you pull the disk that contains Mr. Rucoba's photographs and measurements that you reference in your report?
A Yeah.
Q Sure.
MS. DORMAN: Look through these.
THE WITNESS: Can I look at those?
MS. DORMAN: Uh-huh.

0063

THE WITNESS: I'm not sure what's on this. It says 1 of 2. Materials for -- I'm not sure what that is. Here's Rucoba. That's January 21st.
Q (BY MS. RODRIGUEZ) Here's another one. I think

that's the only one we have.
A I think that's one of these.
Q It's not -- it's not this one I just handed you, correct?
A I don't think so. No.
Q Okay.
A It doesn't look like it to me.
THE WITNESS: Two CDs. What's on this CD? (Witness mumbling.) Two CDs.
Q (BY MS. RODRIGUEZ) Did you bring your whole file, Mr. Hoogestraat?
A Yes. But I can't find the second CD all of a sudden.
Q I couldn't find a CD that indicated Rucoba's inspection in August.
A This is the one in August. What I'm confused about, it says two CDs. I believe I brought everything I had.
Q Do you recall there being two CDs?
A I don't remember. I'm sorry.
MS. DORMAN: Can you show me the cover one

0064

more time? I may be able to look --
Q (BY MS. RODRIGUEZ) And this is a letter from -- appears to be Ms. Dorman's legal assistant, right?
MS. DORMAN: I can clear this up if you'll allow me.
MS. RODRIGUEZ: I don't need you to testify. Thank you.
MS. DORMAN: I'm not trying to testify. It's a letter to Mr. Nalepka with two copies.
A Two CDs. It may mean two CDs, one for him and one for me. There may -- there may only be one CD of it. I'm not sure I was reading the -- the statement correctly.
Q (BY MS. RODRIGUEZ) Well, now that your lawyer's coached you, you are suggesting that maybe there's two copies instead of two CDs, right?
A What I just said is I'm not sure I'm reading it correctly. I brought everything I had and I had that CD.
Q And you relied on Mr. Rucoba to take the pictures and the measurements?
A Yes. I -- he just took pictures. I don't recall measurements.
Q Who took the measurements then?
A He may have -- I just don't recall on mine if he took measurements or not. He may have.

0065

Q All right.
A I think he did take some measurements. I just don't recall in that detail at this moment.
Q I -- I'm confused. Are you saying you didn't take -- you may not have taken any measurements?
A No, I did not say that.

Q Okay.
A If I said that, I stated incorrectly.
Q What are you confused about then?
A We took measurements. I just don't remember what measurements we took at that time.
Q Well, let's look at the CD you just produced to me because I don't see anything but photos on here. And I want to know where those measurements are.
Let's go ahead and mark this CD as Exhibit 12 before I forget.
(Exhibit 12 marked)
Q Okay. I've got the disk out so that you can inspect that it's the exemplar vehicle inspection disk dated 8/2/11, correct?
A Yes.
Q And that's what you've told me is Mr. Rucoba's disk, correct?
A That's what I underst-- yes.
MS. DORMAN: What's on your screen already?

0066

A I don't know what --
Q (BY MS. RODRIGUEZ) Well --
A You have something on your screen. I don't want to open it.
Q (BY MS. RODRIGUEZ) That's all right. It was this, but I opened --
A Oh, okay.
Q -- the --
A Okay.
Q -- the compartment so that you could see the disk.
Okay. If you will open up the two subfolders.
A What do you want --
Q And --
A What are you asking me to do?
Q I do not see any measurements on this disk, sir. And I want those measurements. So I want you to confirm that all that is contained on the disk that you just gave me that I've marked as Exhibit 12 are photographs. Can you confirm that?
MS. DORMAN: Object to form.
Why don't you put it in a thumbnail so you can see them all?
MS. RODRIGUEZ: Object to counsel coaching

0067

her witness.
Do we need to suspend the deposition --
MS. DORMAN: No. You need --
MS. RODRIGUEZ: -- so we can seek court intervention?
MS. DORMAN: -- to give the witness a chance to look at what you've put in front of him.
MS. RODRIGUEZ: The witness is a very

capable man. I don't think he needs you to tell him what to do.
MS. DORMAN: And you don't need to rush him through the review of the pictures you've just put in front of him.
Q (BY MS. RODRIGUEZ) Have you seen this disk before, Mr. Hoogestraat?
A Yeah. Your computer's not -- definitely different than mine.
Q When's the last time you looked at these photos?
A About a week ago.
Boy, is your computer --
Q Was that in preparation for your deposition today?
A No. I looked at them also when I received the disk.
Q Did you bother to look at them in preparation

0068

for your deposition today?
MS. DORMAN: Object to form.
A Yes, I did.
Q (BY MS. RODRIGUEZ) Well, if it wasn't --
A Boy --
Q -- last week when you looked at them --
MS. DORMAN: I don't think he --
Were you not -- were you done with your answer?
THE WITNESS: I'm really having a hard time with her computer. Wow. It's different.
Q (BY MS. RODRIGUEZ) Those are Mr. Rucoba's photos, right?
A Yes.
Q Do you remember Mr. Rucoba writing anything down?
A Not -- not at this time.
MS. DORMAN: Is the original question still pending --
MS. RODRIGUEZ: No.
MS. DORMAN: -- about the measurements?
A I haven't seen any measurements on here so far.
Q (BY MS. RODRIGUEZ) Yeah. I mean, the disk is going to speak for itself, right, Mr. Hoogestraat? What's on the disk is on the disk. That's not going to

0069

change, right?
MS. DORMAN: Object to form.
A I can't imagine how it would.
Q (BY MS. RODRIGUEZ) Right. Okay.
Well, let's go back to your report.
MS. DORMAN: No. He's going to finish looking at the pictures to answer your question.
MS. RODRIGUEZ: No. I don't have a pending question --
MS. DORMAN: I think you're looking for

a --
MS. RODRIGUEZ: -- anymore.
MS. DORMAN: -- sound byte.
MS. RODRIGUEZ: You can ask him any of those questions during your direct examination.
Q (BY MS. RODRIGUEZ) I need my computer back because we're going to go back to your report. We've just established that what's on the disk is on the disk. It's not going to change.
MS. DORMAN: Object to your not letting the witness finish what you'd originally asked him to do.
Q (BY MS. RODRIGUEZ) When you were at the MCI facility in Los Alamitos, California when you were checking whether the driveshaft could escape the tag axle suspension support, how did you do that?

0070

A We loosened the driveshaft from the -- from the transmission end and collapsed it. Then we looked at it that way. And then we also lifted the -- the body up so it's in full jounce. And then we also put it in full rebound, which is dropping it. And then -- excuse me -- and then in reverse.
And then what we did to see if there was some motion, then we -- we dropped one -- one side down to see if that was the possibility of it coming out of there. That's when we were looking at the pathway for the complete driveshaft to come out.
Q All right. When you say we, who was there with you?
A Bob Rucoba.
Q Was anyone else present?
A John Dacus.
Q And he's a lawyer for MCI?
A Yes. As I understand it.
Q Now, you said some words that I didn't understand. I need some clarification. When you said body up, what did you mean by that?
A The suspension has travel as all suspensions do. And you have when you -- when the axle's down and the body's up, that's -- that's full rebound. And then there-- therefore, you check that and then you check on

0071

what the -- is commonly referred to as jounce, which is when the suspension is all collapsed into the bump stops.
Q Okay. So body up is full re-- rebound and you checked the driveshaft dimensions and tag axle suspension support dimensions when the coach was in that position, correct?
A No. No. No.
MS. DORMAN: Object to form.
A No. Well, we disconnected the driveshaft from the transmission. We then collapsed the driveshaft. And then what you do is then in those conditions of -- of just standing there and then you go -- then you go

into -- you extend the suspension and you collapse the suspension to see if under those motions there -- the reason why you have a slip joint in a driveshaft because to account for the suspension movement.

And so that's when we kept that collapsed. And that's when we checked that to see if it would come out. And then what we did is moved on from there and disconnected it from the differential.

Q (BY MS. RODRIGUEZ) All right. As I understand, when you -- well, let me back up.

Who disconnected it, the driveshaft from the transmission end? Who physically did that?

A We had a technician do that.

0072

Q An MCI technician?

A Yes.

Q And do you know if the bus that you were using was the same bus that was used in the test track in Uvalde?

A I believe it was.

Q Now, the driveshaft was disconnected from the transmission end. Is someone in your group holding the driveshaft up then?

A Excuse me?

Q Is someone in your group physically holding the driveshaft up on -- on the transmission end because it's no longer connected there or did you just let it rest in the tag axle suspension support?

A Well, we did -- well, in one situation we held it up and then we dropped it down in suspension support and then we lifted it up into there because that's where we were looking at the two motions.

Q All right. So who was holding the driveshaft while you were doing that?

A Well, part of the time we had the technician do it. Part of the time I did it. Part of the time Rucoba did it. I don't remember exactly on which step who did what.

Q All right. So you -- you hold the driveshaft

0073

up, somebody does in your group, and then drops it down with the -- when the suspension was extended. And then you do the same thing when the suspension was collapsed, correct?

A Yes.

Q All right. Did you do anything else to check the dimensions on that end of the tag axle, the tag axle suspension support, other than that description?

MS. DORMAN: Object to form.

A We checked the -- I think I under-- we -- we collap-- as I stated previously, we collapsed the driveshaft, went through the motions of where it -- where it could travel from there. Okay? In both the jounce and rebound condition. And then that's what we did.

I'm not sure that -- I'm not sure I understand your question and I'm sorry.
Q (BY MS. RODRIGUEZ) Thank you. I think you answered it.
What I would like some more clarification is: So while one of you has the driveshaft, this 70- or 80-pound structure in your hands, are you holding it up and pushing it up to the latch assembly to see if it's going to make contact with that?
A Yeah. At the top we're pushing it up to see if it come -- it can come out of that horn, which is the
0074
suspension support or -- or that enclosure. Is that what you mean?
Q Yeah. You know the latch assembly's at the top, right?
A There's a latch at the top for the --
Q Right.
A -- for the caster steer. That's what I'm talking about.
Q All right. Let's just do it with a photo. That might be easiest. So we'll look at Exhibit 1 to your deposition.
MS. RODRIGUEZ: Mr. Videographer, if you could let us know when you have this in focus.
THE VIDEOGRAPHER: All right.
Q (BY MS. RODRIGUEZ) Can you see that okay?
A Yeah.
THE VIDEOGRAPHER: It's in.
Q (BY MS. RODRIGUEZ) All right. So someone in your group has -- is holding up a 70-plus-pound driveshaft and moving it around the area, the anterior area of this tag axle suspension support, correct?
A Yes. But it's not 70 pounds. That's the whole driveshaft. So it would be approximately half of that, but yes.
Q Okay. Are you saying it's half because it's
0075
connected to the differential or because you only used half?
A No. I'm saying it's half because the other end is connected to the --
Q Okay.
A -- differential.
Q All right. So somebody's holding up a driveshaft and they're moving it within the interior of this opening on the tag axle suspension support and they're seeing if it makes contact up here at the top, correct?
A Correct.
Q Did it make contact at the top?
A I don't recall it making -- yes, it made contact in here.
Q No --

A I'm not -- I didn't see it made contact there. It made contact there.
Q All right. You understand this is where the latch lock --
A Yes.
Q -- is, correct?
A Correct.
Q And you -- as you recall, and you're going off memory, that you just remember it making contact at the back of the tag axle support structure?
A That's correct. It -- it made -- excuse me.
Q That's okay.
A It made contact in here. It did not contact there because we were looking at that mark, see where that mark was, but it made contact in here. It did not go up in there.
Q All right. And so it never contacted the latch -- the latching assembly at the top, correct?
A In that -- in that one, yes.
Q And did it make contact at the bottom of the tag axle suspension support?
A Yes.
Q It did make contact at the bottom?
A It made contact with this down here. It did not contact that.
Q And that being the tie rod, correct?
A Correct.
Q And did it make contact with the tag axle locking cylinder?
A No, it did not.
Q And you did all of this statically, meaning everything was kept -- on the bus kept still except for the person moving the driveshaft around?
A That's correct.
Q All right.
MS. DORMAN: Why don't we take --
Q In your opinion, was that a --
MS. DORMAN: -- a quick break?
Q (BY MS. RODRIGUEZ) -- scientific way of testing whether a driveshaft can escape a tag axle suspension support?
A That's a way of evaluating if your dimensions that you have in your drawing correlate to -- to -- to the vehicle.
Q Well, I'm asking in your opinion, is that a scientifically reliable way?
A It's -- it's a way of evaluating, yes.
MS. DORMAN: Let's take a quick break.
Q (BY MS. RODRIGUEZ) Mr. Hoogestraat, do you need a break or do --
A Yes.
Q -- you want to keep going?

A Yes. I'm --
Q All right.
A -- having trouble with my throat. I'm sorry.
Q We'll get you something to drink if you need it.
A Yeah. Thank you.
THE VIDEOGRAPHER: We're off the record at 10:56.

(Off the record from 10:56 to 11:11 a.m.)
THE VIDEOGRAPHER: We're on the record at 11:11.
Q (BY MS. RODRIGUEZ) Mr. Hoogestraat, before we took a break, you were describing for us the examination you did of the exemplar coach out in California last month, and you mentioned a word as part of your description that I wanted to follow up on. You said we put it in reverse. What did you mean by that?
A Can you read it back when I said that because I'm not sure I understand what -- in what context I was trying to say that?
Q Okay. That's fair.
Did you mean to say that you unlocked the latch?
A No.
MS. DORMAN: Object to form.
A No.
Q (BY MS. RODRIGUEZ) Did you unlock the latch?
A No.
MS. DORMAN: Object to form.
A We did not unlock the tag axle lock.
Q (BY MS. RODRIGUEZ) Do you understand there's a difference between a latch and a tag axle lock?
A Yes. There's the latch that's for the caster steer and there's the other one.
Q Okay.
A But, no, we did not disconnect that or unlatch it I should say.
Q All right. You also said you dropped one side down. What I thought you meant by that is you dropped the trans end down first and then you dropped the differential end down and you checked the movement by hand of the driveshaft with -- with each side down and then both sides down. Did I get that right?
MS. DORMAN: Object to form.
A That's part of what we did, yes.
Q (BY MS. RODRIGUEZ) Okay. Well, what else did you do that we haven't already talked about this morning?
A One of the things we did is there -- the -- if you take and one side of the suspension is in -- is down and the other side of the suspension was up, we did do that also.
Q Okay. I understood that, that --
A And -- and I'm not being as clear as I should

be, I think --
Q Okay.
A -- because I'm not communicating. There is -- when the body's up and the suspension's down, that's called rebound when the full axle's down. Then you got
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the axle all the way out, up to the body and hitting against the bump stop, that's called jounce. That's full.
And then you also have where the axle's like this where one side -- let's say it's the -- the left side is down and the right side is up.
Q And you checked all of that?
A That's part of what we were looking at as far -- in regard to how it -- in that condition as well as then we further went into how does the -- the driveshaft get out of there.
Q And did you check the driveshaft movement with the bus -- bus in each one of those conditions with the driveshaft separated first on the trans end and then attached on the trans end and separated on the differential end?
A As I remember it, yes.
Q But in your mind, you have no doubt that on the Americanos bus the driveshaft first disconnected from the transmission end, correct?
A From what I -- when I -- from what I seen, it disconnected from the transmission end first.
Q And that's your expert opinion in this case, correct?
A That's my opinion, yes.
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Q Now, I'm looking at page 6 of your report, which we've marked as Exhibit 11. If you could put that in front of you again, sir.
A Okay.
Q So you reached the conclusion that when the driveshaft becomes disconnected at the transmission end, it continues to be contained within the two guarding structures and cannot in that condition contact the tie rod or tag lock assembly by doing what you just described for us on the exemplar bus with the B-500 transmission, correct?
A Yes. And the dimensions that I looked at on the drawings.
Q Anything else?
A No. That's what I used.
Q Are you sure about that opinion, sir?
MS. DORMAN: Object to form.
A My opinion is that on this -- on the -- this issue -- this bus, the Americanos bus, as it was set up that that's -- it was contained within that.
Q (BY MS. RODRIGUEZ) Okay. And it's your opinion based also on your movement from the exemplar bus with

the B-500 transmission that the driveshaft is contained in the two guarding -- what you described as two guarding structures, correct?

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A Right. Correct. Yes.
Q And when I asked you are you sure about that opinion, if you would look on page 7 of your report --
A Page 7.
Q -- do you not tell us that all of the opinions in this report are expressed with a reasonable degree of certainty?
A Yes.
Q So is your opinion that the driveshaft when disconnected at the trans end, it continues to be contained within the tag axle suspension support and the driveshaft guard as reliable as all your other opinions in this case?
A I guess. Yes.
Q Okay. And so in your mind, you can't conceive of any way a driveshaft attached only at the differential end in a 102DL3 can hit the tie rod or the tag axle in either an HT-740 transmission or a B-500 transmission, correct?
MS. DORMAN: Object to form.
A At the differential end?
Q (BY MS. RODRIGUEZ) Yes. Let me rephrase the question.
In your mind, you can't conceive of any way that a driveshaft attached only at the differential end,

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meaning it's disconnected at the transmission end, can --
A Oh.
Q -- hit the tie rod or tag lock on a 102DL3 with a B-500 or an HT-740, correct?
MS. DORMAN: Object to form.
A On -- on this incident, on this Americanos bus, I do not see of any way it did that. There may be other accidents where other things occur where other things may have happened that may -- may cause that. I don't know. But on this specific incident, I don't see how it did that.
MS. RODRIGUEZ: Objection, nonresponsive.
Q (BY MS. RODRIGUEZ) I'm asking you about your opinions that you did with inspecting the exemplar coach out in California --
A Yes.
Q -- and looking at our accident bus.
A Yes.
Q And do you have an opinion whether a driveshaft disconnected only at the transmission end can impact a tie rod on a 102DL3 with either a B-500 or an HT-740 transmission?
MS. DORMAN: Object to form.
A In this type of accident that occurred, no. My

opinion is it cannot contact it.

Q (BY MS. RODRIGUEZ) No. I'm asking you in general, sir. You're an expert here. You're giving expert opinions. And in your report, you tell us that the driveshaft -- when the driveshaft becomes disconnected at the transmission half-round yoke end, it continues to be contained within the two guarding structures and cannot in this condition contact the tag axle tie rod or tag axle locking assembly.

Are you now restricting that opinion to this accident?

A No.

MS. DORMAN: Object to form.

Q (BY MS. RODRIGUEZ) Okay.

A What I'm saying is if other things occur elsewhere in a different accident or some other instant, there may -- there may be some instance where that may occur. I don't know. I'm just saying that based on this incident and if nothing else occurs that it will be contained within those two.

Q Well, as an expert engineer, what are you contemplating that could occur where the driveshaft would hit the tie rod?

A I cannot con-- I cannot contemplate anything where that occurs. I'm just saying there -- there's always things that occur that I cannot -- nobody contemplates.

Q Well, as an expert engineer, is it your opinion that it would defy the law of physics based on your measurements and dimensions for a driveshaft to impact a tie rod if it was disconnected at the trans end?

A Defy the law of physics?

Q Yes, sir.

A You mean if the -- the back end of the bus broke off and it -- it could possibly hit the tie rod. That's true. But that does not defy the law of physics.

Q So that's the only thing that you can conceive of is if the back end --

A And --

Q -- of the bus breaks off?

A There may be numerous things that can occur. That's the one I can think of at this time.

Q What do you mean by the back end of a bus breaking off?

A Well, if you separate the whole back end of the bus so that the tag axle separates from the vehicle, then the driveshaft may hit it as it's separating at the tie rod. I'm sure that can occur.

Q Can you think of any --

A I've never seen that, but --

Q Can you think of anything else in which you now

say that it's conceivable that a tie rod -- that a driveshaft disconnected at the transmission end can hit a tie rod?

A No, I did --

MS. DORMAN: Object to form.

A -- not say it was conceivable. That is -- I have never seen something like that. You're saying if anything could occur, and I'm saying that's not conceivable. It's not practical to conceive that.

Q (BY MS. RODRIGUEZ) Okay. Well, short -- assuming that the bus doesn't break in half and the bus is going down the road, do you dis-- dispute that it's even possible for a driveshaft to hit a tie rod and bend it in a 102DL3 if the driveshaft becomes disconnected at the transmission end?

MS. DORMAN: Object to form.

A If the bus is going down the road and the bus gets disconnected -- the driveshaft gets disconnected from the transmission end, I do not see how it's possible at this time to hit the tie rod. That's what I stated here and that's my opinion.

Q (BY MS. RODRIGUEZ) Okay. And so if you don't think it's possible to hit the tie rod, then you don't think it's possible to even bend the tie rod, right?

MS. DORMAN: Object to form.

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Q (BY MS. RODRIGUEZ) That's the logical conclusion, correct?

MS. DORMAN: Object to form.

A Well, if it can't hit it, I don't see how it can bend it.

Q (BY MS. RODRIGUEZ) Right.

Do you have an opinion how the tie rod on the Americanos bus got bent?

A The only thing I can see how it got bent is that when it went into the ditch and it rolled over, it got bent in that movement.

Q In your expert opinion, you cannot conceive of any other way the tie rod could have been bent; is that true?

A That's true.

Q Now, how did you reach your opinion in subsection D of your report that there is not enough ground clearance for a driveshaft to escape what you're calling the two guardian structures while the bus is on its wheels?

A That's by dimension.

THE REPORTER: I'm sorry.

Q That's by the --

THE REPORTER: I didn't hear what you said.

THE WITNESS: That's by dimension.

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Q (BY MS. RODRIGUEZ) When you say dimension, again, that's the exemplar bus with the B-500

transmission and the MCI drawings? Is that what you're referring to by dimension?
MS. DORMAN: Object to form.
A Yes.
Q (BY MS. RODRIGUEZ) So you're telling this jury in Cameron County that the only way the driveshaft on the Americanos bus escaped the tag axle suspension support, which you're now calling a guardian structure, was after the bus rolled on its side. Is that --
A That's --
Q -- a true statement?
A -- my opinion.
MS. DORMAN: Object to form.
A That's my --
Q (BY MS. RODRIGUEZ) That's your opinion?
A That's my opinion that it occurred after the -- it escaped as -- as it was coming on the side.
Q And are you as certain about the validity of that opinion as you are all your other opinions here today, sir?
A Yes.
Q Let's talk about the geometry and the dimensions of the 102DL3. Were you aware that MCI originally

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designed the 102DL3 with a Detroit Diesel 8V-92TA engine in an Allison HT-740 transmission?
A That was the engine available those dates, yes.
Q Okay. Do you know what the difference is in the engine life between the two vehicles?
A The AB92 is shorter than the Series 60.
Q All right. Let's look at what Detroit Diesel has to say.
(Exhibit 13 marked)
Q I'll mark -- I'll hand you what I've marked as Exhibit 13. Do you see what length they've spe-- Detroit Diesel specifies in that document, sir, for the 8V-92T engine?
A 8V-92, they show it as 44 inches.
Q Is that consistent with your understanding of the length?
A Sounds approximately correct. Yes.
(Exhibit 14 marked)
Q All right. And then I'll hand you what I've marked as Exhibit 14. Does -- what does Detroit Diesel say about the length of the Series 60 engine?
A 57 inches.
Q What happens to the length of the driveshaft if you've now got a longer size engine?
A Shortens.

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MS. DORMAN: Object to form.
(Exhibit 15 marked)
Q (BY MS. RODRIGUEZ) Okay. And I'll hand you what I've marked as Exhibit 15. Are those the different

engines that MCI has approved as being available for 102DL3 buses?
A Back in 1994, this looks approximately correct. Yes.
Q All right. Do you know if those are all still approved as of the last time MCI manufactured a 102DL3 in 2000?
MS. DORMAN: Object to form.
A Well, the 8V-92 dropped out someplace in the '90s, so everything was Series 60s. It's been in production since that time, so there's a lot of engine variation that's gone on since that time. That Caterpillar engine they're referring to is no longer made.
It depends in what time frame you're referring to. There's been various engine alternatives available during -- from then till now.
(Exhibit 16 marked)
Q (BY MS. RODRIGUEZ) Well, let's look at Exhibit 16. That's from an MCI manual, correct?
A Yes.

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Q So would that indicate to the jury all the different transmissions that MCI has approved as of that time for use in a 102DL3?
A At that time, yes.
Q All right. And we said -- you told us that this bus, and we saw the final sale record, Exhibit 9, had an HT-740 transmission, correct?
A Yes.
Q Do you know what the length of the HT-740 transmission is?
A Not off the top of my head.
(Exhibit 17 marked)
Q All right. I'm going to hand you what I've marked as Exhibit 17. This would indicate that the length of the HT-740 is 37.4 inches, correct?
MS. DORMAN: Object to form.
A That's what it states here.
Q (BY MS. RODRIGUEZ) Does that sound reasonable based on your understanding of the dimensions of that type of transmission?
MS. DORMAN: Object to form.
A I'm not exactly sure where they're measuring it from, but it sounds probably right.
(Exhibit 18 marked)
Q (BY MS. RODRIGUEZ) Okay. And then I'll hand

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you what I've marked as Exhibit 18. This document indicates that the Allison B-500 transmission is about 34 inches in length, correct?
MS. DORMAN: Object to form.
A That's what it says. That's what it states, correct. Again, based on the dimensions they gave there.

Based on something.
Q (BY MS. RODRIGUEZ) Based on your recollection or understanding of the dimensions of an Allison B-500, does that length sound about right?
A It's -- it's shorter than the 740. That sounds about right.
Q Okay. Now, tell me, did you bother measuring the length of the driveshaft -- excuse me -- the transmission in the engine in that exemplar bus out in California last month?
MS. DORMAN: Object to form.
A Did I measure the engine transmission? No, I did not.
Q (BY MS. RODRIGUEZ) Did anyone in your group last month measure the length of the engine in the transmission in the bus you inspected in California?
MS. DORMAN: Object to form.
A Not that I'm aware of.
Q (BY MS. RODRIGUEZ) And certainly no one

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provided you those figures, correct?
MS. DORMAN: Object to form.
A I don't -- no. No one provided those figures that I'm aware of.
Q (BY MS. RODRIGUEZ) By the way, did you measure the length of the engine and the transmission in the Americanos bus involved in this accident?
A Did I measure --
MS. DORMAN: Object to form.
A -- them? No, I did not.
Q (BY MS. RODRIGUEZ) What is the length of the driveshaft in the Americanos bus?
A Fully collapsed, approximately 28 and a half inches.
Q 28 and a half?
A Approximately.
Q What about extended?
A I don't recall off the top of my head.
Q And why do -- why is it that the fully collapsed measurement is important to you?
A Because the fully collapsed is one we were looking at as far as dimensionally if it can come out of the suspension support.
Q And that's because you understand the dynamics as such that if it becomes disengaged at the transmission

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end, the point where the driveshaft connects in the middle, that's going to collapse together, correct?
MS. DORMAN: Object to form.
A I understand that it can, so that would be the worst condition that it would come out of there.
Q (BY MS. RODRIGUEZ) Now, what was the length of the driveshaft in the bus that you inspected out in California with the Detroit Diesel Series 60 engine and

the Allison B-500?
MS. DORMAN: Object to form.
A Collapsed it was, if I recall correctly, approximately 2 and a half inches longer.
Q (BY MS. RODRIGUEZ) So it was 30 inches collapsed, correct?
A Approximately. Yeah.
Q Where's the measurement where I can -- where I can look at that and validate that --
A I don't --
Q -- and confirm that?
A -- know.
Q So that's just based on your memory?
A Yes, because I looked at the collapsed length.
Q Did you take into fact that that bus was configured with a longer transmission than the subject bus in the accident?

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MS. DORMAN: Object --
A That's --
MS. DORMAN: -- to form.
A That's the reason I measured it because I wanted to take that into account. We could not find one or I didn't have one with a 740. So if it's a B-500, we know it's -- the transmission is slightly shorter. So the driveshaft has to be slightly longer, so you have to take that into account.
Q (BY MS. RODRIGUEZ) And how did you take that into account in reaching your opinions?
A Well, it -- it's simple measurement of a couple of inches longer. So you -- when you're doing this, you take -- try to take that into account. Where it's striking, you would know that if it's striking on your collar that it would really in this case be a couple of inches back from that point. It's very -- it's not that hard to do.
Q So you just did that again statically?
A That's correct.
Q All right. Now, what is the effect of a shorter driveshaft in terms of where the yoke connection sits in the tag axle suspension support?
A It would make it -- in collapsed mode, it would make it closer to the differential and pull it toward

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the -- the forward edge of that opening.
Q Closer to the tie rod, correct?
A That's correct.
Q Closer to tag lock, correct?
A That's --
MS. DORMAN: Object to form.
A -- correct.
Q (BY MS. RODRIGUEZ) Isn't it true that the longer the driveshaft is, the further away the yoke of the driveshaft is from the tie rod and the tag axle lock?

MS. DORMAN: Object to form.
A Well, yeah. It extends into the tag axle, so it'd be dimensionally further away.
Q (BY MS. RODRIGUEZ) Well, as an engineer, you recognize the benefit of having a driveshaft yoke away from steering components like a tie rod and a tag axle lock, correct?
MS. DORMAN: Object to form.
A Yes. It -- yes. I think. I'm not sure I understand your question. I'm sorry.
Q (BY MS. RODRIGUEZ) Well, why would you want a driveshaft away from a component part like a tie rod?
MS. DORMAN: Object to form.
A Well, you don't want the driveshaft to contact the tie rod, if that's what you mean.

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Q (BY MS. RODRIGUEZ) Why not? What -- what could happen?
MS. DORMAN: Object to form.
A May -- may hit it.
Q (BY MS. RODRIGUEZ) If it hits it, what happens?
MS. DORMAN: Object to form.
A It depends what -- how it hit it, when it hit it, how hard it hit it. It depends on the situation.
Q (BY MS. RODRIGUEZ) Well, what's the worst case scenario --
MS. DORMAN: Object to form.
Q -- that you can conceive of?
A Worst case --
MS. DORMAN: Object to form.
A Worst -- well, it's hard to determine worst case, but it -- possibly if it hit it hard enough, it could bend it.
Q (BY MS. RODRIGUEZ) All right. And as a -- as an engineer, why would you want the driveshaft away from a tag axle lock?
MS. DORMAN: Object to form.
A The drive -- the tag axle -- the driveshaft if -- you don't want the driveshaft to hit the tag axle lock. Obviously you don't want it to break the lock.
Q (BY MS. RODRIGUEZ) Why not? What's worst case

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scenario if it breaks?
MS. DORMAN: Object to form.
A It broke the lock.
Q (BY MS. RODRIGUEZ) Well, what could happen if you break a lock while the bus is driving down the road at highway speeds?
MS. DORMAN: Object to form.
A As stated previously in deposition, we've had people say that there's a different feeling in driving the vehicle if the tag axle is not locked.
Q (BY MS. RODRIGUEZ) But you don't really -- you don't know as an engineer what could happen if a tag axle

becomes unlocked at highway speeds?
MS. DORMAN: Object to form.
A As -- as you and some of these -- Kevan Granat has done that study and it shows that it -- basically, he said there was a different feeling as of when reported before. But we have not found anything where it actually caused anything beyond that.
Q (BY MS. RODRIGUEZ) Well, I'll have a chance to visit with Mr. Granat, but I want to know what Virgil Hoogestraat as vice president of engineering for MCI knows about what happens with an unlocked tag axle that suddenly occurs at highway speeds.
A We've had some testing very early on in the

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early '90s where they were testing that the test reports showed that there was very little effect.
Q And you've never produced those test reports to me, have you?
MS. DORMAN: Object to form.
A I don't know what you mean by that. All the reports we have provided to you.
Q (BY MS. RODRIGUEZ) When I asked you at your deposition about the test reports, you said you looked for them and you couldn't find them; isn't that true?
MS. DORMAN: Object to form.
A Any more test reports, that's true.
Q (BY MS. RODRIGUEZ) So when you're talking about test reports from the '90s, do you or do you not have those reports, Mr. Hoogestraat?
MS. DORMAN: Object to form.
A All the reports I have from the '90s we have supplied to you. So I don't know what you mean. I'm sorry.
Q (BY MS. RODRIGUEZ) You just referenced test reports that MCI did with regards to an unlocked tag axle from the '90s. Did you not just say there are test resor-- reports that exist?
A I said there was test reports when we were handling -- ride and handling of the bus is what we

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supplied when the tag axle unlocked. I don't recall in the test reports that we ran those at highway speeds. I don't recall that.
Q But you're telling me that MCI has test reports from the 1990s with an unlocked tag axle being tested on a 102DL3. Is that your testimony?
A At highway speeds, I have never seen that.
Q I'm -- I'm not asking you about highway speeds. My -- my question is: Is it your testing that -- your testimony that MCI has test reports on a 102DL3 from the 1990s on ride handling on an unlocked tag axle?
A Below 20 miles an hour, I have seen those, yes.
Q You have seen those reports?
A I have seen a report, yes.

Q But you don't have any reports and you can't even tell this jury if MCI has even done testing above 20 miles an hour back in the '90s; isn't that true?
A I don't recall those, no.
Q You couldn't find them, could you?
A I did not --
MS. DORMAN: Object to form.
A -- find those.
Q (BY MS. RODRIGUEZ) Did you look?
A Yes, I did, ma'am.
Q What could happen if a driveshaft hit steering

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components on a 102DL3? Could that affect the steering of the bus?
MS. DORMAN: Object to form.
A Which steering component?
Q (BY MS. RODRIGUEZ) Well, are there any steering components in the tag axle assembly?
MS. DORMAN: Object to form.
A There's the tag axle, the tie rod that -- that's the caster steer system. What steering components are you referring to?
Q (BY MS. RODRIGUEZ) Well, let's take that. The driveshaft hit a steering component like the tie rod, could that affect the steering of the bus if it hit it hard enough?
MS. DORMAN: Object to form.
A It would depend.
Q (BY MS. RODRIGUEZ) So --
MS. DORMAN: Are you done with your answer?
THE WITNESS: No.
A I mean, it would depend on how it hit it. There's a lot of variables of what it -- what it could do. If it just bent -- bent it down, it would change the tow of the tires and really wouldn't have much effect other than increased tire wear, so it depends.
Q (BY MS. RODRIGUEZ) So if the tires are towed

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in, that's not going to affect steering, correct?
MS. DORMAN: Object to form.
A Should not affect the steering.
Q (BY MS. RODRIGUEZ) In fact, it's going to help the -- the back of the bus steer straight, right?
MS. DORMAN: Object to form.
A Should.
Q (BY MS. RODRIGUEZ) Let's talk about if the driveshaft hit the tie rod and it forced it in one direction. Is that going to affect steering, Mr. Hoogestraat?
MS. DORMAN: Object to form.
A It forced it in a direction?
Q (BY MS. RODRIGUEZ) Yeah. Either passenger side or driver's side. Is that going to affect steering, Mr. Hoogestraat?

A It would affect the -- the -- the tag -- the driver steering? It would affect -- if you're referring to the driver steering, he would have to correct for -- for that.

MS. RODRIGUEZ: Objection, nonresponsive.

Q (BY MS. RODRIGUEZ) If a driveshaft flailing about, an 80 -- 70, 80-pound driveshaft hit a tie rod and forced it in one direction, either the driver's side or the passenger side, could that affect steering of the

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bus?

MS. DORMAN: Object to form.

A It may affect some of the steering of the bus, yes.

Q (BY MS. RODRIGUEZ) It's going to cause the bus in the back to swing out in that -- in one direction; isn't that true?

MS. DORMAN: Object to form.

A Well, how much is -- did it turn it? I don't know how much you're talking about. How much did it turn it? 11 degrees, then it's to the stop? Is that what you're referring to?

Q (BY MS. RODRIGUEZ) Well, let's take a worst case scenario. It bends the stop. It's going to be more than 11 degrees, isn't it, Mr. Hoogestraat?

MS. DORMAN: Object to form.

A If it bends the stop, it'll be more than 11 degrees. That's correct.

Q (BY MS. RODRIGUEZ) What's the maximum it's going to be? Have you tested that?

MS. DORMAN: Object to form.

A No, we have not tested the maximum.

Q (BY MS. RODRIGUEZ) Do you know as you sit here today as an expert in this case the maximum steer angle of a tag tire with a bent bump stop?

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MS. DORMAN: Object to form.

A Bent bump stop?

Q (BY MS. RODRIGUEZ) Tag axle stop. I apologize.

A Oh. No, I do not.

Q What do you think it is?

MS. DORMAN: Object to form.

A I don't -- I don't know. It'll -- it'll be certainly higher than 11 degrees.

Q (BY MS. RODRIGUEZ) All right. Let's just take -- assume with me that it's 15 degrees. Would you in your expert opinion agree that if the driveshaft hit a tie rod, forced it in one direction by 15 degrees that that's going to cause the rear of the coach to swing in one direction?

A It'll start turning the rear of the coach in that direction.

Q And it's MCI's job as the bus manufacturer to think of those possibilities and guard against them.

MS. DORMAN: Object to --
Q Don't you agree?
MS. DORMAN: Object to form.
A We try to think of everything to a reasonable degree.
Q (BY MS. RODRIGUEZ) Well, it's your job as the bus manufacturer, correct?

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MS. DORMAN: Object to form.
A To a reasonable degree, we try to do everything we can contemplate.
Q (BY MS. RODRIGUEZ) Well, a reasonable bus manufacturer will work to think of those possibilities, especially on a steering component, and guard against them. Do you agree with that?
MS. DORMAN: Object to form.
A That's why the steering stops are there. Yes, we did do that.
Q (BY MS. RODRIGUEZ) And you think the steering stops are robust enough to stop a tag axle from breaking it off?
MS. DORMAN: Object to form.
A If you put enough force on anything, I'm sure it'll break it off.
Q (BY MS. RODRIGUEZ) Isn't it true the exemplar coach you inspected out in California steering stop was broken off?
A One was. Yes.
Q And it had been there a while, hadn't it?
A Yes.
Q So MCI knows that those steering stops can be broken off?
A Yes, they can.

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Q So what has MCI done to protect against steer in those tag tires if they know it's foreseeable the steer -- the tag axle stop can be broken off?
MS. DORMAN: Object to form.
A If the tag axle stop is broken off, you're supposed to inspect that and replace the tag axle stop.
Q (BY MS. RODRIGUEZ) And if it's broken off during a trip, this -- the driver's not going to know that, are they?
A That's why --
MS. DORMAN: Object to form.
A -- the dri-- I don't know if the driver would know that or not.
Q (BY MS. RODRIGUEZ) He's driving down the road. Do you think a driver's going to know if a tag axle stop's broken off?
A No, but he may know that the tag axle is -- is not locked, and therefore, that's why he has the switch to lock it.
Q So the only way a tag axle stop can be broken

off is if the tag axle's unlocked and that tie rod's forced over in one direction?
A There may --
MS. DORMAN: Object to form.
A That would depend on how it got broken. I don't
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know how it got broken on that bus.
Q (BY MS. RODRIGUEZ) That's common, isn't it, for a tag axle stop to be broken on one side on a 102DL3?
MS. DORMAN: Object to form.
A I --
Q (BY MS. RODRIGUEZ) Hasn't that been your experience?
MS. DORMAN: Object to form.
A It is not my experience that that's common.
Q (BY MS. RODRIGUEZ) Oh, so it's just a coincidence that the one on the Americanos bus was bent and the one on your test bus was broken. Is that your testimony?
MS. DORMAN: Object to form.
A The one on the Americanos bent. That one's broken. But you asked me if it's common. I don't know if that's common.
Q (BY MS. RODRIGUEZ) You just don't -- it could be; you just don't know, right?
A I do not --
MS. DORMAN: Object to form.
A -- know if that's common.
Q (BY MS. RODRIGUEZ) But it could be; you just don't know, correct?
MS. DORMAN: Object to form.
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A I don't know.
Q (BY MS. RODRIGUEZ) Let's talk about what a reasonable bus manufacturer would do since you're an expert in this case. You would agree with me that a reasonable bus manufacturer would protect safety-critical steering components from impact by a driveshaft, correct?
MS. DORMAN: Object to form.
A We try to protect, yes.
Q (BY MS. RODRIGUEZ) Yeah. They would -- a reasonable bus manufacturer would take reasonable steps to protect against a flailing driveshaft from hitting a safety-critical component like a tie rod?
MS. DORMAN: Object to form.
Q (BY MS. RODRIGUEZ) Do you agree with that?
A Yes.
Q And if a bus manufacturer fails to take reasonable steps to protect a tie rod from being hit by a flailing driveshaft, then that bus manufacturer is acting unreasonably. Do you agree with that?
MS. DORMAN: Object to form.
A Under reasonably anticipated conditions, true.
Q (BY MS. RODRIGUEZ) Because it's foreseeable to

the bus manufacturer that if the tie rod is impacted and steer is induced in one direction up to 15 degrees that the rear of the coach will swing out in one direction,

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correct?

MS. DORMAN: Object to form.

A It'll swing there momentarily and come back, yes.

Q (BY MS. RODRIGUEZ) And it's foreseeable to the bus manufacturer then that -- that action could have adverse consequences on the handling of that bus --

MS. DORMAN: Object --

Q -- if it's at highway speeds, correct?

MS. DORMAN: Object to form.

A For that moment, yes. It would -- it would swing out and then it would caster back in -- in line. Is that what -- that's what it would do.

Q (BY MS. RODRIGUEZ) I mean, it would be negligent for a bus manufacturer to not guard against a driveshaft from hitting a tie rod, right?

MS. DORMAN: Object to form.

A I don't know if it's negligent. Under reasonable conditions, we try to protect the tie rod from hitting from the dri-- by the driveshaft.

Q (BY MS. RODRIGUEZ) What do you mean by reasonable conditions?

A Reasonable expectation of what -- of if the -- if it came apart at the -- that it would not hit the -- the tie rod in such a manner that it would cause it to

0110

always -- that it would hit it. That's what I call reasonable.

Q In order to reach a reasonable expectation, you got to do validation testing, don't you, Mr. Hoogestraat?

A No --

MS. DORMAN: Object to form.

A -- you don't.

Q (BY MS. RODRIGUEZ) Oh, you -- you can just look at dimensions and make that decision?

A Yes.

Q All right. And you base that opinion on what? Your years of experience with MCI?

A My years of experience with MCI, yes.

Q Anything else?

MS. DORMAN: Object to form.

A No.

Q (BY MS. RODRIGUEZ) Are you aware of any early field recalls, actions -- field actions or customer report that the 8V-92 and HT-740 package in the 102DL3s lost driveshaft at the transmission end due to insufficient axle clearance at full compression of the tag axle suspension?

A Full compression of the -- on the 8V-92?

Q Yes, sir.

A Well, that would be years ago. I don't recall
that.
Q Who would know at your company if I wanted to
ask them?
A Anymore? That -- that would have been -- had to
be in the early '90s. I don't know of anybody who would
know that anymore.
Q Are you aware of several 102DL3 buses in Florida
having to have special air bags installed with taller
bump stops in the air springs to prevent the tag axle
from contacting the driveshaft and failing the driveshaft
at the transmission connection?
MS. DORMAN: Object to form.
A Back in the '90s when -- is that what you're
referring to?
Q (BY MS. RODRIGUEZ) No. At any time.
MS. DORMAN: Object to form.
Q (BY MS. RODRIGUEZ) Has that come to your
attention as vice president of engineering design for
MCI?
A In Florida? No.
Q Have you had any customers complain that MCI
102DL3s unlock unexpectedly while traveling down the
highway?
A No customer has told me that it unlocked
unexpectedly.
Q As vice president engi-- of engineering design,
do you know if any customer has complained to MCI whether
their 102DL3s have come unlocked unexpectedly?
A Not that I have been informed.
Q And you would be the person to be informed; is
that true?
MS. DORMAN: Object to form.
Q (BY MS. RODRIGUEZ) Or would that be somebody
else if there was a customer complaint --
MS. DORMAN: Object to form.
Q (BY MS. RODRIGUEZ) -- like that?
A Customer complaints comes through our service
department or our fleet support group. I don't -- I
don't know if they communicated that to me or not. If
they -- they got it, I -- I did not get it.
Q Well, that's something serious enough that the
vice president of engineering design should be made aware
of. Don't you agree?
MS. DORMAN: Object to form.
A Something like that, they have historically told
me, yes.
Q (BY MS. RODRIGUEZ) Yeah. You'd want to know if
any of your customers are out there driving MCI 102DL3s
on highways and your tag locks are coming unlocked
unexpectedly. That's something Virgil Hoogestraat would

want to know, right?
MS. DORMAN: Object to form.
A As I've stated previously, they typically tell me of the instances like -- similar to that or other incidents like that. They have not communicated that to me.
MS. RODRIGUEZ: Objection, nonresponsive.
Q (BY MS. RODRIGUEZ) I want to know if that's something you want to know --
MS. DORMAN: Object to form.
Please don't yell at --
Q -- as vice president of engineering?
MS. DORMAN: Please don't yell at the witness.
A I -- they -- they have told me and I would want to know that, yes.
Q (BY MS. RODRIGUEZ) And you'd want to know that why, Mr. Hoogestraat?
A It's a -- it's a failure on the bus.
Q It's a safety concern. Isn't that what you were about to say?
MS. DORMAN: Object to form.
A No, I did not say that. I said it's a failure on the bus.
Q (BY MS. RODRIGUEZ) So you want to know about

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all failures on buses then? Is that the standard?
MS. DORMAN: Object to form.
A Yeah. We look at failures on the buses. Yes, we do.
Q (BY MS. RODRIGUEZ) You -- you -- vice president of engineering for MCI wants to know about every customer complaint that there is a failure on the bus. Is that your testimony?
A Not --
MS. DORMAN: Object to form.
A -- every failure on the bus, but if there's a pattern of failures, they can try to communicate that to me. Yes, they do.
Q (BY MS. RODRIGUEZ) So how many tag axles have to unlock on freeways in the United States before Virgil Hoogestraat wants to know about them when you say a pattern?
MS. DORMAN: Object to form.
A It happened on a freeway on a bus going down the road unlocked?
Q (BY MS. RODRIGUEZ) Yes. If it unlocked suddenly.
MS. DORMAN: Object to form.
A Suddenly unlocked. I would think they would communicate that to me right away.

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Q (BY MS. RODRIGUEZ) Why would you want to know that? Why is that important for you to know that

particular failure if it was only one incidence?
MS. DORMAN: Object to form.
A Because it's unusual.
Q (BY MS. RODRIGUEZ) No other reason, right?
MS. DORMAN: Object to form.
A No. It -- if it's an unusual failure like that, they would want to communicate that.
Q (BY MS. RODRIGUEZ) Not because people's lives would be put at risk, right? That -- that's not what prompts you to want to know it, is it?
MS. DORMAN: Object to form.
A If people's lives are at risk, I would want to know that obviously. But if this -- this is an unusual thing. If I -- if they thought people's lives were at risk, I'm sure they would communicate that.
Q (BY MS. RODRIGUEZ) And you agree if a tag axle comes unlocked suddenly at highway speeds that people's lives can be put at risk?
MS. DORMAN: Object to form.
A I don't know that.
Q (BY MS. RODRIGUEZ) You don't know that?
A No, I do not.
Q Now, MCI has an engineering department, correct?

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A Yes.
Q That's your department, right?
A No.
Q That's not your department?
A The engineering department works for somebody else.
Q Who do they work for?
A Brian Couch.
Q And Mr. Couch would be able to testify to this jury about FMEA studies --
MS. DORMAN: Object to form.
Q -- that MCI has conducted?
MS. DORMAN: Object to form.
A He would know about them, yes.
Q (BY MS. RODRIGUEZ) Okay. Do you know about them?
MS. DORMAN: Object to form.
A I said -- as stated previously in the previous deposition, I have been involved in some, yes.
Q (BY MS. RODRIGUEZ) All right. Now, MCI even has a test group department, right?
A Yes.
Q So MCI has the capability and resources to test whether a driveshaft can hit a tie rod with sufficient force to unlock a tag axle; isn't that true?

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MS. DORMAN: Object to form.
A They could run that test, yes.
Q (BY MS. RODRIGUEZ) MCI's got the knowledge to set up that type of test through either your test group

department or your engineering department, correct?
A Yes.
Q You have the buses to test on, right?
A Yes.
Q And yet, you as the vice president of engineering have never done one on a 102DL3 even after you learned about the claims being made in this case that a tag axle lock assembly came unlocked and is defective; is that correct?
MS. DORMAN: Object to form.
A The tag -- in my opinion, the tag axle lock did not -- the tag axle did not come unlocked, so therefore, why would I ask for that test?
MS. RODRIGUEZ: Objection, nonresponsive.
Q (BY MS. RODRIGUEZ) You learned that there were claims being made by an engineer expert that MCI's used in the past that a 102DL3 had a tag axle come unlocked, and yet, you never tested whether a driveshaft can cause a tag axle to come unlocked --
MS. DORMAN: Object to form.
Q (BY MS. RODRIGUEZ) -- even though you knew

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those claims were being made. Isn't that true, Mr. Hoogestraat?
MS. DORMAN: Object to form.
A I know he made that claim and yes -- no, we did not run a test.
Q (BY MS. RODRIGUEZ) And no one at MCI has run that test, correct?
A Not that I'm aware of.
Q And if it was run, as vice president of engineering design, you would have been made aware of it, true?
MS. DORMAN: Object to form.
A I believe I would have, yes.
Q (BY MS. RODRIGUEZ) And you told us previously that you don't know of any failure mode effects analysis studies on the 102DL3 accident, correct?
MS. DORMAN: Object to form.
Q (BY MS. RODRIGUEZ) Excuse me. That was a bad question.
You've told us previously that you don't know if there are any failure mode effects analysis studies on the 102DL3 done by MCI, correct?
MS. DORMAN: Object to form.
A I believe the question at that time was, was there any at -- on the tag -- on the tag axle at that

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time. There may have been FMEA's done since that time here recently. I don't know.
Q (BY MS. RODRIGUEZ) Would you like --
A I don't recall.
Q Would you like to see your deposition to refresh your testimony, sir?

A Yes.
Q I'll refer you to page 151, line 13.
Question: Are you aware of any FMEA studies on the -- specifically on the 102DL3?
Your answer was: Of any?
Question: Yes, sir.
I don't know if there's -- if there's any. There may be. I just don't know at this time.
And let's go ahead and mark this as Exhibit 19 to your deposition.
(Exhibit 19 marked)
Q Does that testimony refresh your recollection, sir?
MS. DORMAN: She forgot my objection, but that's fine.
A Yes.
Q (BY MS. RODRIGUEZ) Okay. So at the time of your deposition just in June a few months ago, you didn't know if MCI had done any FMEA studies on the 102DL3, correct?
A Correct.
MS. DORMAN: Object to form.
Q (BY MS. RODRIGUEZ) After your deposition, did you go and look to find out if MCI had done any FMEA studies?
MS. DORMAN: Object --
A On the --
MS. DORMAN: -- to form.
A -- 102DL3?
Q (BY MS. RODRIGUEZ) Yes, sir.
A No, they had not.
Q So you did check and you confirmed they had not done any, correct?
A That's correct.
MS. DORMAN: Object to form.
A On the 102DL3.
Q (BY MS. RODRIGUEZ) And so it's your testimony that MCI has since done some failure mode effects analysis on the tag axle lock assembly?
MS. DORMAN: Object to form.
A No, they have not.
Excuse me. What do I do with this piece of paper? Does this stay here?
Q (BY MS. RODRIGUEZ) Yes, sir.
A Okay. Thank you.
Q All right. When was Mr. Granat's testing out at the Uvalde track?
A Excuse me?
Q When did Mr. Granat do his testing at the Uvalde track?
MS. DORMAN: Granat.
A Oh, Granat. I'm sorry.

Q (BY MS. RODRIGUEZ) Granat. Did I say it wrong?
A I don't know. But you may have been right. I call him Granat. You may be right. I don't -- I'm sorry. I didn't recognize what you said.
I don't know. I'd have to look through the stuff. I don't remember the exact date.
Q All right. Let's see --
A It was around the time of my deposition. I remember that.
Q Okay. So you think it was sometime in -- which deposition? In June or July?
A June, that I recall.
Q Was it after your deposition or before?
A It was after.
Q Okay. So Mr. Granat went out to the Uvalde track, as you recall, in June 2011, correct?
A As I recall, it was in the June-July time frame,

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yes.
Q Well, let's figure it out. I'd like to know the date. So if you can get whatever materials from your file that will help you.
A Okay.
MS. DORMAN: Why don't we take the exhibits off of here?
Q (BY MS. RODRIGUEZ) Mr. Hoogestraat, I think I've got something I can -- no, you stay there. I'll come to you.
A Oh, okay.
Q Okay. You saw Ms. Dorman handed me for the first time what appears to be a hard drive, and it's labeled 1995 MCI 102DL3 Tag Axle Steering Testing. Do you see that?
A Yes.
MS. DORMAN: Object --
Q Okay.
MS. DORMAN: -- to form.
Q (BY MS. RODRIGUEZ) Now, you haven't seen these videos -- well, let me just ask you. Do you see here on this picture that we've got from this hard drive that it says Uvalde, Texas 6/12/2011?
A Yes.
Q All right. Is that consistent with your

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understanding of when Mr. Granat did his testing?
A Yes.
Q Okay.
A After the first June deposition. That's correct.
Q All right. And you're relying on Mr. Granat's testing in forming your opinions; is that true, sir?
A I -- I had seen his video. I had seen videos of his testing in July at some period of time before I -- before I did that, yes.

Q Mr. Hoogestraat, have you ever heard of the TREAD Act?
A Yes.
Q Does it apply to MCI?
A Yes.
Q What is your understanding of MCI's duty to report defects that MCI learns about in its buses --
MS. DORMAN: Obje--
Q -- under the TREAD Act?
MS. DORMAN: Object to form.
A The TREAD Act, we -- we report an -- again, I'm not familiar exactly with the details, but we report incidences of -- and on the vehicles for the TREAD that -- that occurred as required by law.
Q (BY MS. RODRIGUEZ) Well, what do you understand

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the TREAD Act to be?
A It's a --
MS. DORMAN: Object to form.
A -- reporting system to the government in regard to incidents that have been reported to MCI to one of its employees.
Q (BY MS. RODRIGUEZ) And that's for any defect in the bus, not just related to tires, right?
MS. DORMAN: Object to form.
A To defects in the bus, period.
Q (BY MS. RODRIGUEZ) Okay. And what's your understanding of the consequence of MCI's failure to report defects in buses that MCI becomes aware of --
MS. DORMAN: Object to --
Q -- under the TREAD Act?
MS. DORMAN: Object to form.
A Could you re-- re-- restate that question or have it reread? I --
Q (BY MS. RODRIGUEZ) Sure.
A I think I missed it.
Q Under the TREAD Act, what's your understanding of the consequences of MCI's failure to report defects in buses that MCI becomes aware of?
MS. DORMAN: Object to form.
A I don't know the consequences. I'm sure the

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federal government specifies them quite well.
Q (BY MS. RODRIGUEZ) Are you aware that in the TREAD Act, individuals in a corporation who have knowledge of a safety defect and hide the defect can be financially and criminally responsible?
MS. DORMAN: Object to form.
A That would not surprise me. I don't know that for a fact, but that would not surprise me.
Q (BY MS. RODRIGUEZ) Well, the TREAD Act doesn't apply to bus operators like Americanos, does it?
MS. DORMAN: Object to form.
A Again, I don't know if it does or not. I'm not

aware that it does.
Q (BY MS. RODRIGUEZ) Okay. So it's your understanding that it only applies to bus manufacturers, correct?
MS. DORMAN: Object to form.
A I -- I know it -- it applies to bus manufacturers of a certain size, yes.
Q (BY MS. RODRIGUEZ) And you told us in your first deposition that MCI has five days to notify NHTSA if it becomes aware of a safety issue. Do you remember that testimony?
A Of a NHTSA recall, that's correct, related to a safety issue. That's true.

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Q (BY MS. RODRIGUEZ) That is true.
So it's a true statement that MCI has five days to notify NHTSA if it becomes aware of a safety issue, correct?
A Yes.
MS. DORMAN: Object to form.
Q (BY MS. RODRIGUEZ) All right. Now, would you agree with me that driveshaft interference with component parts is a safety issue reportable to NHTSA?
MS. DORMAN: Object to form.
A A failed driveshaft?
Q (BY MS. RODRIGUEZ) Driveshaft interference. If the driveshaft's hitting component parts. Is that a -- that's a safety issue reportable to NHTSA, correct?
MS. DORMAN: Object to form.
A It would depend.
Q (BY MS. RODRIGUEZ) All right. Do you remember the 2008 MCI recall -- and I can give you the number -- 09V041000, when MCI recalled model year number 2005 through 2008 D4500 and D4505 coaches equipped with Detroit Diesel Series 60 engines and a ZF transmission because customers may experience a possible interference between the driveshaft U-joint bearing cap bolts and the tag axle cen-- center beam assembly? Do you remember that recall?

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A Yes.
Q All right. So, again, the question is: Driveshaft interference with component parts is a safety issue reportable to NHTSA, correct?
MS. DORMAN: Object to form.
A I'd have to look if that was reported to NHTSA or -- it would -- the bulletins are all supplied to NHTSA. I don't know if that was a safety -- NHTSA safety recall or it was a recall on our regard --
Q (BY MS. RODRIGUEZ) Well, some --
A -- our recall.
Q Okay. But we can agree that somebody determined that it was a safety issue. It might have been NHTSA and it might have been MCI. It may have been both. Right?

MS. DORMAN: Object to form.
A No. What I said was we recalled it because there was contact with the -- we -- now, in some instances, there was contact between the driveshaft and the bottom of the tag axle support. What I don't recall, if that was a NHTSA safety recall or it was a recall because we had that issue reported to us. I just don't recall.
Q (BY MS. RODRIGUEZ) All right. But MCI recognized that driveshaft interference was a safety issue?

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A Again, if it contact -- I don't recall if we decided that was a safety recall or it was a recall because it was striking, that just because it was striking does not mean it would -- we would list it as a safety recall. Safety recalls go to NHTSA.
Q Well, if this was a NHTSA recall with a NHTSA number, then it was determined by either NHTSA or MCI to be a safety recall, correct?
A If -- if --
MS. DORMAN: Object to form.
A -- MCI -- it has a NHTSA number on it, it's a safety recall.
Q (BY MS. RODRIGUEZ) All right. So if that's the case, then you would agree with me that driveshaft interference with the component parts is a safety issue?
MS. DORMAN: Object to form.
A We determined that when it hit the bottom that that could cause a safety issue, yes. That was our opinion.
Q (BY MS. RODRIGUEZ) And why did that create a safety issue?
A Well, if you hit -- the driveshaft hits the thing, you'd lose -- you could break the driveshaft and therefore it cannot drive the vehicle. Under certain circumstances, the ve-- the bus would stop and therefore

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the driver could not move the vehicle and therefore you could have a safety concern.
Q That's the only reason?
A That was the reason.
Q Now, let's talk about this TREAD Act again. Mr. Hoogestraat, you know it -- well, let me ask you. Are you an officer of MCI?
A Certain --
MS. DORMAN: Object to form.
A -- parts of MCI, yes.
Q (BY MS. RODRIGUEZ) Okay. What's your title?
MS. DORMAN: Object to form.
A Vice president of design engineering.
Q (BY MS. RODRIGUEZ) As vice president in design engineering and an officer of the company, you know that a person who violates the reporting requirements of the

TREAD Act with the intention of misleading the secretary of transportation with respect to motor vehicle equipment safety-related defects that have caused death shall be subject to criminal penalties. You're aware of that, are you not?

MS. DORMAN: Object to form.

A As stated previously, I don't have the TREAD Act in front of me, but I -- it would sound reasonable that they would have some kind of things like that in there.

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Q (BY MS. RODRIGUEZ) Well, were you aware that a person could get up to 15 years for that type of violation?

MS. DORMAN: Object to form.

A The TREAD Act came out several years ago and I don't recall every detail in the TREAD Act.

Q (BY MS. RODRIGUEZ) So you didn't know that employees such as yourself of MCI, if you misled the secretary that you could get 15 year -- up to 15 years in prison for doing -- if -- if it was with respect to a motor vehicle equipment safety-related defect that caused a death?

MS. DORMAN: Object to form.

A As I stated previously, it was -- I looked at it several years ago when it came out. I don't recall every detail in that complete TREAD Act.

Q (BY MS. RODRIGUEZ) All right. Well, how about civil penalties? Are you aware that the TREAD Act has civil penalties?

A I'm sure it does.

Q Okay. Do you know what those civil penalties are to a person such as yourself?

A As stated previously, I don't remember every detail when I read it several years ago when it came out. I don't remember the numbers.

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Q Were you aware that it's up to -- a person can be fined up to $17 million in civil penalties for violating the TREAD Act?

MS. DORMAN: Object to form.

A As stated previously, I do not remember when I read it several years ago what the maximum fines were or any of the fines. I'm sorry. I don't remember back then.

Q (BY MS. RODRIGUEZ) Why did you take the time to read the TREAD Act? Why was that applicable to Virgil Hoogestraat?

A The TREAD Act was sent to everyone within the company that was an officer or in -- or many other departments. Exactly who all of us got it, I don't know.

Q Okay.

A I don't recall.

Q Well, let's see if this helps you a little bit then. I'll mark Exhibit 20.

(Exhibit 20 marked)
Q Do you read here where the criminal penalties is up to -- prison for up to 15 years? Do you see that, Mr. Hoogestraat?
MS. DORMAN: I'm going to object to the form.
Is this the entire statute or just one
0132
section?
MS. RODRIGUEZ: You can certainly advise your client on the statute. I'm surprised you haven't.
MS. DORMAN: Well, if you knew what the statute said, you'd know that it only applies to the last 10 model years of the vehicle. So you can ask questions about our '95 coach. The TREAD Act certainly doesn't apply to it.
MS. RODRIGUEZ: And its component parts that you sold recently?
A That's what it says here.
Q (BY MS. RODRIGUEZ) All right. Let's talk about NHTSA a little bit. Is that your position within the company to notify NHTSA if you become aware of motor vehicle equipment safety-related defects?
A If I become aware of them, I -- I communicate it, yes.
Q Have you ever done that before?
A Yes.
Q Because it's your obligation, it's your duty to do that, correct?
A Part of my function, yes.
Q Do you think it would be a prudent thing to provide information about this accident to The Office of Defects Investigation with NHTSA, an impartial third
0133
party -- third party, to determine if MCI's right or if my client, Americanos, is right about whether this is a safety issue with the driveshaft hitting a tie rod unlocking a tag axle?
MS. DORMAN: Object to form.
A I stated previously I don't think the driveshaft when it became loose from the transmission end hit the tie rod or the -- the lock. So, no, I don't see any reason to communicate that.
Q (BY MS. RODRIGUEZ) So you're not going to notify NHTSA of the driveshaft -- safety issue created by a driveshaft unlocking a tag axle and hitting a tie rod -- tie rod and inducing the steering. Is that your testimony?
A I'm saying that --
MS. DORMAN: Object to form.
A -- it is my opinion that it did not do that; therefore, no, I would not notify them of something that I didn't think it did.
Q Okay.

MS. DORMAN: We'll take our lunch break now.
THE VIDEOGRAPHER: We're off the record. The time is 12:12.
(Lunch break from 12:12 to 1:11 p.m.)

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THE VIDEOGRAPHER: We're on the video record. The time is 1:11.
Q (BY MS. RODRIGUEZ) Mr. Hoogestraat, do you remember before we took a lunch break at your counsel's request that we were talking about reporting safety defects to NHTSA?
A Yes.
Q And as I understand it, you don't deem there to be any safety defect that you've learned about in connection with this accident and the investigation of this accident that you think needs to be reported to NHTSA, correct?
A That's correct.
Q All right. Let's go ahead and take a look at something.
Sir, are you aware that Greyhound is instituting secondary driveshaft containment loops on 102DL3s at the transmission end?
MS. DORMAN: Object to form.
A I've heard somebody mention that. That's all I know. I don't remember who mentioned it to me.
Q (BY MS. RODRIGUEZ) Do you remember if it was somebody at Greyhound or --
A It was not somebody at Greyhound. It was somebody internal. Somebody just mentioned it.

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Q All right. Let's look at some testing that was done without a safety loop. And it seems a little bit slow, but it's a high-resolution camera. You recognize that as a tag axle assembly, correct?
A Yes.
Q Did you watch this video over lunch?
A I did not see this video.
Q Do you see a driveshaft impacting a tie bar?
A Yes.
Q Did you see it unlock the tag axle?
A No, I did not notice that.
Q You didn't see it unlock?
A It may have. I just didn't see it.
Q Does it appear to be locked now?
A No, it doesn't appear to be locked from that view.
Q Would it surprise you to know that this was on an MCI 102DL3 with a Series 60 engine and HT-740 transmission?
MS. DORMAN: Object to form.
A Could you ask that question -- repeat the question?

Q (BY MS. RODRIGUEZ) Sure.
A I don't know.
Q Would it be -- would it surprise you to know
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that this testing was done on an MCI 102DL3 with an HT-740 transmission and a Detroit Diesel Series 60 engine?
A I'm sure it could have been.
Q Okay. So this video shows that your opinion that there's no way the driveshaft can escape from that tag axle suspension support is wrong; is that correct?
MS. DORMAN: Object to form.
A Based on this video. Is there more detail on -- is that the correct driveshaft or do we not know?
Q (BY MS. RODRIGUEZ) Sir, I've made this -- I sent a letter to your counsel that you are welcome to come up and inspect it if you'd like to look at this vehicle.
A Oh, is that right?
MS. DORMAN: Actually, objection, form. She handed it to me this morning.
MS. RODRIGUEZ: No. I sent a letter.
MS. DORMAN: Not for that.
Q (BY MS. RODRIGUEZ) Did you see the test videos that were produced during Mr. Jones' deposition wherein the containment loop that was brought together by Greyhound was tested for validation? Did you happen to see that video?
A I did see Mr. Jones' video where they had a loop
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similar to what's shown in this --
Q Okay.
A -- other picture and they were running it. Yes.
Q And so the one we just looked at without the safety loop, you saw that the driveshaft actually exited the bus based on that video? Did you see that?
MS. DORMAN: Object to form.
A It may have -- it certainly exited the -- the suspension support.
Q (BY MS. RODRIGUEZ) And -- and the driveshaft containment loop, correct?
MS. DORMAN: Object to form.
A Yeah. I don't see it there anymore. I mean --
Q (BY MS. RODRIGUEZ) Okay.
A -- I assume that's what happened.
Q All right. Now, this is the video -- this is one of the videos that you saw previously testing the validity of that containment loop, correct?
MS. DORMAN: Object to form.
A Yes. It looks like the one I saw from -- that Jones had produced.
Q (BY MS. RODRIGUEZ) And in this video, you're able to see that the driveshaft when it becomes separated with that secondary containment loop does not impact the

tie bar at all, correct?

MS. DORMAN: Object to form.

A In that test, it did not contact the tie bar. That's correct.

Q (BY MS. RODRIGUEZ) And you saw a second test done apparently on a different day that it didn't hit the tie bar either. It just stayed within the driveshaft containment loop, correct?

A There was two videos, so, yes, I assume it was a separate day.

Q All right. I'm going to go ahead and mark these -- this -- these two videos that you watched, the driveshaft failure without a safety loop and with a safety loop, as Exhibit 21 to your deposition.

(Exhibit 21 marked)

MS. DORMAN: Object to form.

Q (BY MS. RODRIGUEZ) And so that there is no dispute, let's go ahead --

MS. RODRIGUEZ: Wait. Wait.

MS. PEREZ: Okay.

MS. RODRIGUEZ: Let's play the video of what we're marking so that MCI counsel can be allayed that what we're marking is truly what Mr. Hoogestraat saw.

MS. PEREZ: It's syncing to a different format, like a sync -- a newer PowerPoint, so that might be the issue.

Q (BY MS. RODRIGUEZ) All right. Well, we'll let her figure out how to show the actual video that we're going to attach and then I'll get you to verify that it's what you watched just now. Okay?

A Okay.

Q All right. Mr. Hoogestraat, after seeing that video of a comparison between the separation of a driveshaft without a safety loop and one with a safety loop, as vice president of engineering for MCI, do you now think it's a good idea for MCI 102DL3s with steerable tag axles to have a secondary driveshaft containment system?

MS. DORMAN: Object to form.

A No. I think we will look into that test so we understand more details about that test.

Q (BY MS. RODRIGUEZ) So you're finally going to start doing some of your own testing. Is that what you're telling me?

MS. DORMAN: Object to form.

A No, I did not say that. I said I was going to look into the basis of how that test was run.

Q (BY MS. RODRIGUEZ) So you'd like to rebut the -- the test. You'd like to discredit it, right?

MS. DORMAN: Object to form.

A I didn't say that. I said I wanted to look into it.
Q (BY MS. RODRIGUEZ) If you find when you look into it that test is valid, will you then go to NHTSA, Mr. Hoogestraat?
MS. DORMAN: Object to form.
A No. I will review if I think that's a safety issue required by NHTSA.
Q (BY MS. RODRIGUEZ) You just saw evidence that indeed a driveshaft can come outside of what you're now calling the guarding structure of the tag axle suspension support, did you not?
A I saw --
MS. DORMAN: Object to form.
A -- a video, that's correct. I also told you that I would then have to look into it further to see what it is. That's a video. Then we'll look into what we want to do next.
Q (BY MS. RODRIGUEZ) Well, you know from Mr. Jones' deposition that he's looked at other buses that have had driveshafts hit tie rods and tag axle locks, correct?
MS. DORMAN: Object to form.
A I have looked at buses that -- based on what he supplied that looked like they had been in accidents.

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Q (BY MS. RODRIGUEZ) Oh, so you think all of these buses were in an accident?
A Well, at least --
MS. DORMAN: Object to form.
A -- one of them was as I understand it.
Q (BY MS. RODRIGUEZ) Yeah. You know the Harrisburg, Pennsylvania bus was in an accident, right?
A That one is in there, I think.
Q You saw it in the news, didn't you?
A Yeah, but -- I saw the Harrisburg accident in the news. I assume what he showed there was from that bus from the Harrisburg accident.
Q All right. And so the -- the Harrisburg accident, when you saw that in the news, did you think, oh, there's an MCI bus involved in another accident?
MS. DORMAN: Object to form.
Q Did that register in your mind?
MS. DORMAN: Object to form.
A I did say it's an MCI bus in an accident, yes.
Q (BY MS. RODRIGUEZ) Did you notice the tag tire was rotated?
MS. DORMAN: Object to form.
A Not from the pictures I saw on the news. No, I did not --
Q (BY MS. RODRIGUEZ) All right.

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A -- notice that.
(Exhibit 22 marked)

Q So let's look at Exhib-- what I've marked as Exhibit 22. And by the way, were you aware we've made these buses available for you to come look at also? Were you aware of that?
A You --
MS. DORMAN: Object to form.
A You may have. I don't know.
Q (BY MS. RODRIGUEZ) Okay. So this is from our bus. Assume with me that these photos are from unit 60630. Do you recall seeing witness marks on the Americanos bus that you see in those photos?
MS. DORMAN: This is Americanos? I'm sorry. This is from which bus?
MS. RODRIGUEZ: Americanos 60630.
MS. DORMAN: Okay.
A Yeah, I remember seeing those marks.
(Exhibit 23 marked)
Q (BY MS. RODRIGUEZ) All right. And then I'll hand you what I've marked as Exhibit 23. This is from another bus. It's an MCI bus, 102DL3. Do you see similar witness marks on photographs taken of that bus?
A This one has a hole in it.
Q The tie rod's bent, isn't it?

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A Well, the tie rod's bent and it's got a hole in it.
Q Do you know if that coach rolled over?
A 6934. Off the top of my head, no, I do not.
Q All right. Assume with me that it didn't roll over. The evidence will be that it didn't roll over. Can you conceive of a way as the vice president of engineering for MCI that that tie rod would get bent like that?
MS. DORMAN: Object to form.
A Not right now. I -- I can't even conceive how it got that big hole in it.
Q (BY MS. RODRIGUEZ) Does that appear to be where the lock clamps are, sir?
MS. DORMAN: Object to form.
A It's near there, yeah.
Q (BY MS. RODRIGUEZ) Isn't that where our tie rod is bent on the Americanos coach, near the tie rod lock clamps?
MS. DORMAN: Object to form.
A From my recollection, it's there.
(Exhibit 24 marked)
Q (BY MS. RODRIGUEZ) Let me hand you what I've marked as Exhibit 24. This is from a different MCI 102DL3 bus. And, again, do you see similar witness marks

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on your tag lock and tie bar that you saw on the Americanos 60630?
MS. DORMAN: Object to form.
A Witness marks on where?

Q (BY MS. RODRIGUEZ) Well, let's --
A Could you restate that?
Q Sure.
Let's talk about the photos individually then. We can hold them up for the jury. I'll come around.
Okay. This photo, which is the first one that's marked Exhibit 24, what is this plate, Mr. Hoogestraat?
A That's the tag axle lock plate.
Q Yeah. And there are witness marks where it appears to be hit by something, right?
A Yeah. Something hit it.
Q It's not supposed to look like that, is it?
A No.
Q Do you see this tie rod in front of the tag axle lock plate?
A Yes.
Q Does it appear that tie rod is bent forward just in the location of the lock clamps?
A Certainly in that picture it looks bent.

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Q Do you see some witness marks here, some fresh marks where it looks like something -- heavy metal object impacted the bottom of the tag axle support suspension?
A Something hit that, yes.
Q Yeah.
This is similar to the witness marks that we see on the -- on the Americanos bus, correct?
MS. DORMAN: Object to --
A No.
MS. DORMAN: -- form.
Q (BY MS. RODRIGUEZ) It's more extensive, isn't it?
A Well, this is certainly bent differently and I don't remember that on there. It could have been. This is -- there's some differences.
Q All right. And there's some similarities, true?
A There certainly is marks similar.
Q And there certainly is -- appears to be a bent tie bar in the same location, correct?
MS. DORMAN: Object to form.
A Similar location.
Q (BY MS. RODRIGUEZ) All right. And this is page 2 of Exhibit 24. This is just a close-up view of the -- of the lock clamps, correct?
A Yes.

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MS. DORMAN: Object to form.
Q (BY MS. RODRIGUEZ) This is part of the tag axle lock assembly on a 102DL3, correct?
A Correct.
Q All right. And, again, we see witness marks on these plates, correct?

A There's some kind of marking there, yeah, that's correct, where something has hit it.
Q Do you remember seeing witness marks on the lock clamp plate on 60630?
A There's a mark here. There's a mark there.
Q Appears to be similar to the one on unit 6352, correct?
MS. DORMAN: Object to form.
A Well, certainly they both have a mark. It's kind of just -- nothing against this picture. It's kind of blurry, but certainly both of them have a mark.
Q (BY MS. RODRIGUEZ) Well, you've had the benefit of seeing this assembly up close and personal several times, correct?
A This one.
Q Yes. That's correct, right?
A That one.
Q All right. And then this appears to be -- I know this may be hard for you to tell, and if you can't

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tell, that's fine. But it appears to be the picture of the tie rod, right?
MS. DORMAN: Object --
A It could --
MS. DORMAN: -- to form.
A -- be.
Q (BY MS. RODRIGUEZ) All right. And do you see some witness marks on the tie rod similar to what we saw on 6 -- unit 60630?
A There's a --
MS. DORMAN: Object to form.
A That has a mark and that has a mark, yes. Marks.
Q (BY MS. RODRIGUEZ) Marks. Yeah.
A Yeah.
Q Do they look similar to you, Mr. Hoogestraat?
MS. DORMAN: Object to form.
A Could be.
Q (BY MS. RODRIGUEZ) Is there any reason why you haven't gone out to look at these buses that we've made available to you through your counsel to inspect them?
A I can't answer that. I don't know.
MS. DORMAN: Probably because we just got the letter advising of the inspections yesterday.
MS. RODRIGUEZ: Object to sidebar.

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MS. DORMAN: Overruled.
(Exhibit 25 marked)
Q (BY MS. RODRIGUEZ) And I will hand you what I've marked as Exhibit 25. We'll go through these again.
Do you see an MCI tag axle lock assembly here?
A Yes.
Q That's the locked one, isn't it?

MS. DORMAN: Object to form.
A Well, it's hard to tell from that picture, but I -- it could be.
Q (BY MS. RODRIGUEZ) You can't tell that this is the non-actuating cylinder?
A Well, I know that's the lock cylinder, ma'am. But I can't see if the lock is through -- through there or not. I can't see the pin.
Q Well, MCI sells an actuating tag lock cylinder and a non-actuating tag lock cylinder, correct?
A Correct.
Q This is the non-actuating, meaning the pin doesn't go up and down, right?
MS. DORMAN: Object to form.
A I can't tell that from that picture.
Q (BY MS. RODRIGUEZ) Well, let's look at it in comparison with the 60630. Is the 60630 cylinder an

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actuating or a non-actuating --
A That's an --
Q -- tag lock?
A That's an actuating.
Q All right. So does that help you, Mr. Hoogestraat, when you now compare them -- let's show it up for the video for the jury, please.
The two cylinders, we've got one here and then one over here. Does that help you by putting these side to side in determining if this is the non-actuating cylinder?
MS. DORMAN: Object to form.
A That is probably the non-actuating cylinder from what I can tell.
Q (BY MS. RODRIGUEZ) And so here we have evidence that a non -- what's supposed to be a tag lock kit that MCI sells has come -- appears to have come unlocked, correct?
MS. DORMAN: Object to form.
A And, again, based on this picture, I cannot tell that. It may have, but I cannot tell that.
Q (BY MS. RODRIGUEZ) Well, does it look like the tag lock plate is making contact where it's supposed to make contact with the lock clamp plates?
MS. DORMAN: Object to form.

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A What I'm trying to say is there's supposed to be a pin through here, and I can't tell if it's through there or not from that picture. It could be, but I can't tell.
Q (BY MS. RODRIGUEZ) Well, let me ask you this. Is that lock plate, is it supposed to be pulled out like that, Mr. Hoogestraat?
MS. DORMAN: Object to form.
A No. No.
Q (BY MS. RODRIGUEZ) Those holes -- I'm sorry.

A No, it should not be. But the --
Q Those holes are supposed to be lined up together, aren't they?
MS. DORMAN: Object to form.
A In a -- in a perfect world, that's true. But that is quite a long slot, so I cannot tell if it's still in that slot or not from that picture.
Q (BY MS. RODRIGUEZ) Oh, so you're saying the pin is small enough that it leaves space to -- on one end where the pin could still drop down through?
A There is --
MS. DORMAN: Object to form.
A There is space in that slot in that direction. That's correct.
Q (BY MS. RODRIGUEZ) That much space?

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A I don't --
MS. DORMAN: Object to form.
A -- know that. I can't --
Q (BY MS. RODRIGUEZ) It's a tight space, isn't it?
A It's relatively --
MS. DORMAN: Object to form.
A -- tight. I can't tell from that picture is what --
Q (BY MS. RODRIGUEZ) All right.
A -- I'm trying to say.
Q Well, we're happy to have you come look at it. It's unlocked. So --
MS. DORMAN: Object to form.
Q -- if --
MS. DORMAN: Object to sidebar.
Q (BY MS. RODRIGUEZ) Let's look at this next photo. It appears to be a tie bar, correct?
A It looks --
MS. DORMAN: Object to --
A -- like a --
MS. DORMAN: -- form.
A -- tie bar from that picture.
Q (BY MS. RODRIGUEZ) With witness marks on it similar to what we have in the Americanos bus, correct?

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A There's witness marks on it, yes.
Q Do you realize that of all these exhibits that we've just gone through, 25, 24 and 23, that those all involved MCI 102DL3 buses that lost a driveshaft?
MS. DORMAN: Object to form.
Q (BY MS. RODRIGUEZ) On the transmission end.
MS. DORMAN: Object to form.
A You asked me if I know that?
Q (BY MS. RODRIGUEZ) Yes, sir.
A No, I don't know that.
Q All right. Assume with me that Exhibits 23 through 25 that we just went through sustained that

damage you looked at as a result of a driveshaft disconnecting on the transmission end. That would be further evidence for you, Mr. Hoogestraat, that indeed a driveshaft can make contact with a tie rod, would it not?

MS. DORMAN: Object to form.

A Again, I got to look at these and see if that -- if that driveshaft made those marks on the tie rod.

Q (BY MS. RODRIGUEZ) Assume with me that they did. Just assume that. We can ask hypotheticals in -- in lawsuits, sir.

Assume with me the jury believes and the evidence shows that the impact marks you're looking at on Exhibits 23 through 25 were as a result of a driveshaft

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impacting those structures. Then that would invalidate your opinion that it's not possible for a driveshaft to hit a tie rod.

MS. DORMAN: Object to form.

Q (BY MS. RODRIGUEZ) Is that -- do you agree with that?

MS. DORMAN: Object to form.

A Again, I would have -- as I stated previously, I have to review the conditions on how this occurred to see if that -- if that relates to the -- the Americanos conditions or not, but that's what I'm -- that -- I would have to review that.

MS. RODRIGUEZ: Objection, nonresponsive.

Q (BY MS. RODRIGUEZ) I'm not asking you to apply it to the Americanos bus, sir. I'm asking you -- you've given an opinion to this jury that it's not conceivable for a driveshaft disconnected on the transmission end to hit a tie rod in a 102DL3.

A Yes.

Q And I've now -- assume with me that the evidence is that Exhibits 23 through 25 show that indeed a driveshaft did hit a tie rod in the tag axle lock. Then your opinion would be wrong.

MS. DORMAN: Object to form.

Q (BY MS. RODRIGUEZ) Correct?

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MS. DORMAN: Object to form.

A As I stated previously, I'd have to review that before I change an opinion.

Q (BY MS. RODRIGUEZ) No. I'm asking you -- it's a hypothetical, sir. If the evidence shows that the driveshaft hit the tie rod on Exhibits 23 through 25, then you're wrong in your opinion that it's not possible in a 102DL3 --

MS. DORMAN: Object to form.

Q -- isn't that true?

MS. DORMAN: Asked and answered.

A As I said before, I got to look at the situation how it occurred that if it -- if indeed hit that. I don't know how to answer your hypothetical.

Q (BY MS. RODRIGUEZ) I'm just telling you to assume it hit it. We're not -- we're not going to debate here whether it did or not. I'm saying assume it did. If it did, then you're wrong.
MS. DORMAN: Object to form.
Q Can you agree to that?
MS. DORMAN: Object to form. Asked and answered.
A I don't know how to assume that. I can't -- I'm not -- I don't understand under the conditions of all this how to do that assumption. I'm sorry. I cannot

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answer that.
Q (BY MS. RODRIGUEZ) All right. So you don't think that you have to answer hypotheticals in this lawsuit?
MS. DORMAN: Object to form.
A I didn't say that.
MS. DORMAN: He's answered the question three times now.
Q (BY MS. RODRIGUEZ) Okay. So if -- assume with me, sir -- this is a hypothetical -- that the evidence shows that Exhibits 23 through 24, the damage that we just went through, was as a result of a lost driveshaft at a transmission end on a 102DL3. Would that prompt you to go to NHTSA?
MS. DORMAN: Object to form.
A As I stated previously, I would have to review how this all occurred and whether that applies to what you go to NHTSA for.
Q (BY MS. RODRIGUEZ) Oh, so there are occasions which you think MCI doesn't have to go to NHTSA to report interference with a driveshaft on a tie rod. Is that your testimony?
MS. DORMAN: Object to form.
A I don't think I said that.
Q (BY MS. RODRIGUEZ) Okay. Then would you agree

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with me that if there is evidence that a driveshaft failing at the transmission end hits a tie rod, that's a reportable event? That's something MCI should go to NHTSA on?
MS. DORMAN: Object to --
A I didn't --
MS. DORMAN: -- form.
A -- say that either.
Q (BY MS. RODRIGUEZ) Okay.
A I said I would review it to see under what conditions this occurred and whether that applies to something we should go to NHTSA.
Q So what are the conditions, Mr. Hoogestraat, that you think would require -- would allow you to not go to NHTSA if a driveshaft hits a tie rod?
MS. DORMAN: Object to form.

A One of the things we evaluate is if the vehicle would have lost control. And if that is the case, then we go to NHTSA.
Q (BY MS. RODRIGUEZ) Well, when you did that recall in 2008 with the driveshaft interference, did vehicles lose control then?
A No, they did not. But they stopped -- they could stop in a very -- in an inst-- they could stop -- have stopped in a precarious position for the driver, so

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that's why we did it.
Q And this too, correct?
MS. DORMAN: Object to form.
A That situation back then, the driveshaft -- we had -- the bus, when it was built, the driveshaft could contact the -- the tag axle. Therefore, you could break the driveshaft. Therefore, you could put the operator in a precarious position. It was a -- that's an issue where the -- there was an inadequate clearance between the driveshaft and the -- and the suspension support. So that's why we did it.
Q (BY MS. RODRIGUEZ) So you can't conceive of any -- you can't give me any reason why you wouldn't go to NHTSA if the evidence shows that the tag axle -- excuse me -- the driveshaft impact the tie rod?
MS. DORMAN: Object to form.
A As I said, we will evaluate how and what condition it did that. If it -- and if it is a condition that we feel appropriate to go to NHTSA, we will do that.
Q (BY MS. RODRIGUEZ) Was is that condition? I want to know what's going to -- what it's going to take to get MCI to go to NHTSA. What is that condition?
MS. DORMAN: Object to form.
A And I'll tell you right now it could be many conditions. How did this fail? What was the condition

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that caused this issue? What's the sequence of events? And once we understand that, then we'll decide whether we need to go to NHTSA.
Q (BY MS. RODRIGUEZ) Well, it doesn't matter how the driveshaft failed. It mattered what the consequence of the driveshaft failure was. Correct?
MS. DORMAN: Object to form.
A Well, no. We would have -- we would also take into consider how the drivesha-- driveshaft failed.
Q (BY MS. RODRIGUEZ) And so you think that --
A We'd take it under consideration is what I meant.
Q All right. So what are your plans now that you have this information in front of you to investigate these driveshaft failures with evidence of tie rod and tag axle lock impacts?
MS. DORMAN: Object to form.
A I don't understand your que-- what do you

mean -- what do you mean by what is my plans?
Q (BY MS. RODRIGUEZ) What -- as vice president of engineering for MCI, what do you -- you have evidence in front of you, which you're apparently questioning. So what's your plan to investigate those claims that a driveshaft hit a tie rod and a tag lock which you say is impossible to do?

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MS. DORMAN: Object to form.
A We will look -- I will have to get and see when I -- we can look into this.
Q (BY MS. RODRIGUEZ) Now, you said you found out about the Harrisburg, Pennsylvania accident, correct?
A That was on the news. Yes.
Q When did you find out that it involved -- it also involved an unlocked tag axle?
MS. DORMAN: Object to form.
A That, I found out yesterday.
Q (BY MS. RODRIGUEZ) Did that surprise you that you had another MCI 102DL3 roll over as a result of an unlocked tag axle?
MS. DORMAN: Object to form.
A I don't know that it would -- it rolled over because of an unlocked tag axle. I was under the understanding is they -- when they found it, it was unlocked.
Q (BY MS. RODRIGUEZ) So again, you're questioning the validity of that evidence, correct?
MS. DORMAN: Object to form.
A I am questioning -- I am saying that that's what I learned yesterday that they found it unlocked. Also, according to there, it supposedly came off one of the cement abutments. I -- I don't know exactly all the

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details in that incident.
Q (BY MS. RODRIGUEZ) And where'd you get that information?
A That was on the news.
Q That the tag axle came unlocked? That --
A No.
Q -- was on the news?
A No. That --
MS. DORMAN: Object to form.
A -- was not on the news. That he had a hit cement abutment and then rolled -- went on the side and rolled over. That was on the news.
Q (BY MS. RODRIGUEZ) Where did you get the information that the tag axle was unlocked in the Harrisburg accident?
A That was --
MS. DORMAN: Object to form.
A -- shown to me yesterday. I believe that was shown to me yesterday somewhere.
Q (BY MS. RODRIGUEZ) What was shown?

A That was some pictures.
Q Do you know if they were photos taken by Mr. Jones?
A They may have been. They --
Q Okay.

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A -- may have been.
Q Were you aware that MCI has had other customers who've complained about tag axles coming unlocked at highway speeds?
MS. DORMAN: Object to form.
A As stated previously, I'm not aware of that.
Q (BY MS. RODRIGUEZ) That's why Coach USA asked MCI to come up with a locking kit; isn't that true?
MS. DORMAN: Object to form.
A I don't know that. As I stated previously, I was not involved in that. I just knew about the locking kit.
Q (BY MS. RODRIGUEZ) All right. You didn't know that Coach had an accident involving an unlocked tag axle, a bus that rolled over and people who were killed?
MS. DORMAN: Object to form.
A As I stated, I did not know that. I just knew about the kit being created as I stated in previous depositions.
Q (BY MS. RODRIGUEZ) Well, isn't it true that for four years MCI refused for liability reasons to sell to Greyhound the tag lock kit that MCI manufactured?
MS. DORMAN: Object to form.
A I am not aware of that.
Q (BY MS. RODRIGUEZ) Oh, you're not -- you've

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never been made aware of that by any of your employees. Is that your testimony?
MS. DORMAN: Object to form.
A That's correct.
MS. DORMAN: Asked and answered.
Q (BY MS. RODRIGUEZ) And were you aware then that the -- this tag lock kit that MCI manufactures and sells was not made available to Greyhound until the Nappanee refurb project started in July 2010?
MS. DORMAN: Object to form.
A I was not aware of that.
Q (BY MS. RODRIGUEZ) Was the tag lock kit ever validated by MCI?
MS. DORMAN: Object to form.
A As I stated previously, I was not involved in the tag lock kit. I just knew it -- so I do not know that answer to that.
Q (BY MS. RODRIGUEZ) Well, Mr. Hoogestraat, you're here on behalf of MCI as the vice president of engineering design and an expert in this case and you know the central issue against MCI is whether the tag axle lock assembly was sufficient and robust enough. And

you're saying you don't know if the lock kit was ever validated?
MS. DORMAN: Object to form. Asked --

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A That's what I --
MS. DORMAN: -- and answered.
A I've already answered that. I do not know because I was not vice president in engineering at that time when they did the lock kit.
Q (BY MS. RODRIGUEZ) Well, if --
A I was on -- I was on a totally different project.
Q So you don't know if any testing was done by MCI to find out if the tag lock kit would stay locked in the event of a driveshaft impact?
MS. DORMAN: Object to form. Asked and answered.
A As stated previously, I was involved in something else at that time. I was not involved in the tag lock kit, so, no, I do not know.
Q (BY MS. RODRIGUEZ) Well, who would know? I -- I -- I want somebody from MCI to be able to answer these questions. Do you know?
MS. DORMAN: Object to form.
A That's still with MCI today? I don't know who that would be.
Q (BY MS. RODRIGUEZ) Well, how old is that tag lock kit that MCI designed and manufactured?
MS. DORMAN: Object to form.

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A I don't know. I remember seeing the kit.
Q (BY MS. RODRIGUEZ) All right. And so --
A Excuse me. I remember seeing the kit bulletin. I don't -- never have seen the kit.
Q Now, as vice president of engineering for MCI, is it your position that the 102DL3 that MCI sold is still safe even without that tag axle lock kit?
A Yes.
Q So if Ms. Dorman in questioning were to suggest that maybe Americanos was at fault somehow for not putting on a tag lock kit, you would dispute that type of suggestion, wouldn't you?
MS. DORMAN: Object to form.
A As I told you, I believe this tag axle steering system is safe. If Americanos chooses to put the tag lock kit on, it's up to them.
Q (BY MS. RODRIGUEZ) And it's safe that -- they're driving a safe bus if they choose not to put it on according to Mr. Hoogestraat, correct?
A That's what I stated.
Q So in your opinion, MCI 102DL3s with steerable tag axles are safe buses, correct?
A Yes.
Q So Americanos would have no reason to put the

102DL3s out of service with steerable tag axles, correct?
0165
A We have not asked them to do that, so, yes, that's what I'm saying.
Q And in your opinion, Americanos would have no reason to warn customers that MCI 102DL3s that it's operating is unsafe, correct?
MS. DORMAN: Object to form.
A As I said, it's our -- my opinion that the 102DL3 is a safe vehicle.
Q (BY MS. RODRIGUEZ) Well, you've talked about warning in your expert report, right?
A Yes.
Q So according to Mr. Hoogestraat, Americanos doesn't have to warn its customers before they get on a 102DL3 that it's an unsafe or defective bus. Is that your opinion?
A That's my --
MS. DORMAN: Object --
A -- opinion.
MS. DORMAN: -- to form.
Q (BY MS. RODRIGUEZ) All right. Now, you've been out to the Nappanee refurb project, correct?
A Yes.
Q And you know that Greyhound is working on 102DL3s, correct?
A Yes.
0166
Q Do you think it's unethical for Ms. Dorman to use information that MCI obtained from a customer in the course of business against the same customer in a lawsuit? Do you think that's unethical, Mr. Hoogestraat?
MS. DORMAN: Object to form.
A You're asking me a legal opinion and I don't have legal opinions.
Q (BY MS. RODRIGUEZ) Well, I'm asking you a business question actually. As a businessman, do you think it's unethical for your lawyer to use information obtained from a client through the ordinary course of business against that customer in a lawsuit?
MS. DORMAN: Object to form.
Q (BY MS. RODRIGUEZ) Do you have an opinion on that?
A I don't have --
MS. DORMAN: Object to form.
A I don't have an opinion because I don't under-- that question is a very broad question. I don't have an opinion.
Q (BY MS. RODRIGUEZ) Well, is that what -- is that what MCI customers can expect, that MCI will disclose confidential proprietary business information and use it against them if a lawsuit ever arises?
MS. DORMAN: Object to form.
0167

A I don't know what you're referring to, so I don't know if it's confidential or not. I don't know.
Q (BY MS. RODRIGUEZ) Well --
A I'm sorry. I don't know what you're -- what you're referring to.
Q Well, then let me --
MS. DORMAN: Why don't you show him --
Q -- get specific --
MS. DORMAN: -- the article?
Q (BY MS. RODRIGUEZ) -- because -- let's get specific then because your lawyer has been talking about things going on at the project and the number of coaches and things that Mr. Barksdale allegedly told her and he mentioned in his deposition.
MS. DORMAN: Actually, they're from a Bus Ride article that was published.
MS. RODRIGUEZ: You don't need to coach your witness.
MS. DORMAN: You know what? If you're impugning my integrity and my reputation, I'm going to speak up.
Q (BY MS. RODRIGUEZ) Mr. Hoogestraat, did you know that Mr. Barksdale testified in his deposition that Greyhound is putting hundreds of 102DL3s out on the road with steerable tag axles?

0168

MS. DORMAN: Object to form.
A I have not me-- read Mr. Barksdale's deposition.
Q (BY MS. RODRIGUEZ) And that would be just flat-out wrong, wouldn't it --
MS. DORMAN: Object to --
Q -- if that's what he testified to?
MS. DORMAN: Object to form.
A As I stated in the June deposition, when I was there, they were talking about locking up the tag axles. That's all I know. I did not see him do one, but they mentioned it.
Q (BY MS. RODRIGUEZ) How many inspections have you attended of the Americanos bus?
A That would be in that report that I put together. I'd have to pull that off of there.
Q Several, right, if --
A Several.
Q -- not all of them?
MS. DORMAN: Object to form.
A I can't speak for all of them, but I've been there to several of them.
Q (BY MS. RODRIGUEZ) And you saw Alex Cook at some of those depositions, correct?
MS. DORMAN: Depositions?
Q (BY MS. RODRIGUEZ) Excuse me. Inspections.

0169

MS. RODRIGUEZ: Thank you.
A I saw him at some of the inspections.

Q (BY MS. RODRIGUEZ) You don't fault Mr. Cook for intend-- attending the inspections, do you?
MS. DORMAN: Object to form.
A That's Greyhound's prerogative of who they attend the inspections.
Q (BY MS. RODRIGUEZ) Well, you don't fault him for being there, do you?
MS. DORMAN: Object to form.
A Fault him? Like I said, that's up to Greyhound who -- who's at the inspections.
Q (BY MS. RODRIGUEZ) Well, let me ask you. In your opinion, that's what a reasonable company engineer would do, correct?
MS. DORMAN: Object to form.
A Who -- as I said before, who Greyhound decides to send to their inspections is their decision.
Q (BY MS. RODRIGUEZ) Well, during those inspections, was Mr. Cook accommodating to you and courteous?
A Yes.
MS. DORMAN: Object to form.
Q (BY MS. RODRIGUEZ) How long have you known Mr. Cook?

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A Well, I met Mr. Cook probably three years ago, something like that. I -- I don't remember how long ago.
Q Do you know him to be an honest person?
MS. DORMAN: Object to form.
A I don't know -- I mean, I met him. We've had some business discussions. That's all I -- that's -- and we've had certainly some conference calls where he was on the conference call. And that's -- it's more business-related.
Q (BY MS. RODRIGUEZ) So you wouldn't be able to tell if he's an honest person or not?
MS. DORMAN: Object to form.
A He was honest in his business dealings. That's all I know.
Q (BY MS. RODRIGUEZ) All right. And what do you think of him as an engineer? Is he a qualified engineer in your opinion?
MS. DORMAN: Object to form.
A I don't know that. As I stated previously, we were involved in some business-related discussions and that's what we were involved in. I -- we -- he was -- he would ask my opinion on something and I would give it if -- if he -- he wanted it.
MS. RODRIGUEZ: Objection, nonresponsive.
Q (BY MS. RODRIGUEZ) Do you have an opinion of

0171

Mr. Cook as an engineer?
A No.
MS. DORMAN: Object to form.
Q (BY MS. RODRIGUEZ) All right. Now, if NHTSA

saw the video that we just watched, based on your past experiences with NHTSA, do you think that they would take action?
MS. DORMAN: Object to form.
A I would not pretend to speak for NHTSA.
Q (BY MS. RODRIGUEZ) You don't have an expert opinion on -- based on your past experiences on what NHTSA would do?
A No. I --
MS. DORMAN: Object to form.
A -- do not know what NHTSA would do.
Q (BY MS. RODRIGUEZ) All right. And recalls, well, they can be costly for manufacturers. You'd agree with that, Mr. Hoogestraat?
MS. DORMAN: Object to form.
A Depending on the recall, some are very costly; some are not.
Q (BY MS. RODRIGUEZ) Well, MCI has a thousand or more D series coaches on the road; isn't that true?
MS. DORMAN: Object to form.
A At last count, I believe it's over a thousand.

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Yes.
Q (BY MS. RODRIGUEZ) What do you think that count is?
MS. DORMAN: Object to form.
A I don't know, but I know it's a thousand or more.
Q (BY MS. RODRIGUEZ) If all of those buses got recalled, that would cost millions of dollars to MCI, wouldn't it?
MS. DORMAN: Object to form.
A I don't know that.
Q (BY MS. RODRIGUEZ) Well, who would know from MCI?
A Well --
MS. DORMAN: Object to form.
A -- no one at this time.
Q (BY MS. RODRIGUEZ) Well, if NHTSA recalled all the D series coaches due do the interference between the disconnected driveshaft and the tie bar and tag lock assembly, what would MCI have to do --
MS. DORMAN: Object to form.
Q -- in that scenario?
MS. DORMAN: Object to form.
A Well, first off, NHTSA doesn't do the recall. We would do the recall. I mean, they would ord-- I mean,

0173

we would be doing the recall, not NHTSA.
Q (BY MS. RODRIGUEZ) Well, you knew what I meant. If NHTSA ordered that you recall the D series coaches due to interference between the disconnected driveshaft and the tie bar and the tag lock assembly, what would that entail for MCI to have to do --

MS. DORMAN: Object to form.
Q -- if that occurred?
MS. DORMAN: Object to form.
A Well, MCI would have to design whatever's appropriate that NHTSA is -- is indicating is an issue.
Q (BY MS. RODRIGUEZ) So you'd have to fix all of the defective parts that NHTSA's indicating is an issue free of charge to your customers, correct?
MS. DORMAN: Object to form.
A That's what a NHTSA recall is, yes.
Q (BY MS. RODRIGUEZ) And then the civil lawsuits start from customers or operators who would sue MCI for lost revenue due to their buses being pulled out of service, right?
MS. DORMAN: Object to form.
A Again, you're getting into a legal area and I don't have an opinion.
Q (BY MS. RODRIGUEZ) Well, let me ask you this. Did MCI go into bankruptcy because of prior recalls in
0174
the past?
MS. DORMAN: Object to form.
A Not that I'm aware of.
Q (BY MS. RODRIGUEZ) You don't have any understanding of what prompted MCI's last bankruptcy?
MS. DORMAN: Object to form.
A No, I don't know exactly what caused the last -- obviously bankruptcy's caused by lack of money, I mean, because of financial. But what caused the financial stress, I -- I do not know.
Q (BY MS. RODRIGUEZ) Do you have a pension with MCI?
MS. DORMAN: Object to form.
Counsel, this is going way beyond the scope of his expert opinions and his expert role in this case. You've already --
MS. RODRIGUEZ: I can ask him --
MS. DORMAN: You've already deposed --
MS. RODRIGUEZ: -- bias questions.
MS. DORMAN: -- him twice in his capacity as an employee of MCI.
MS. RODRIGUEZ: I'm asking him a bias question for --
MS. DORMAN: I'm not going to let him answer that question. I think --
0175
MS. RODRIGUEZ: Then you need --
MS. DORMAN: -- it's harassing.
MS. RODRIGUEZ: -- to make your objection for the record and we'll take it up with the judge.
MS. DORMAN: Fine.
Q (BY MS. RODRIGUEZ) Are you going to follow your attorney's advice and refuse to answer my question?
MS. DORMAN: Yes.

A Yes.
Q (BY MS. RODRIGUEZ) How much are you getting paid by MCI?
MS. DORMAN: Object to form.
A What do you mean? My salary?
Q (BY MS. RODRIGUEZ) Well, you're an expert witness in this case, sir. I'd like to know how much MCI is paying you.
A As an expert witness, they're paying me nothing.
Q All right. Then as your -- as vice president of engineering.
A That's my salary.
Q What's that?
A About 195,000 a year.
Q Do you have any retirement accounts with MCI?
MS. DORMAN: Object to form.
He's not going to answer that question.

0176

Q (BY MS. RODRIGUEZ) Are you going to follow your lawyer's advice?
A Yes.
Q If Mr. -- excuse me. If MCI goes out of business, you're out of a job, right?
MS. DORMAN: Object to form.
A I'm out of a job --
MS. DORMAN: You don't have to answer that question. This -- this whole line is harassing. You don't have to answer that.
Q (BY MS. RODRIGUEZ) Are you going to refuse to answer that question based on your lawyer's recommendation?
A Yes.
Q And so if MCI goes out of business, you may lose your retirement, correct?
MS. DORMAN: Object to form.
That question is harassing. You do not have to answer it.
Q (BY MS. RODRIGUEZ) Isn't it true that you can't acknowledge the steerable tag axle is defective on the 102DL3 because that defect unfolded during your watch --
MS. DORMAN: Object to form.
Q -- as vice president of engineering at MCI?
MS. DORMAN: Object to form.

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A No.
Q (BY MS. RODRIGUEZ) You had to have one of your customers, a common carrier, bring this to your attention before you decided you would start investigating it; isn't that true?
MS. DORMAN: Object to form.
A No.
Q (BY MS. RODRIGUEZ) How many hours have you spent on this case?
A I don't know.

Q What all did you review to prepare for your deposition?
A I reviewed the -- these CDs. We can go through these individually if you like. I reviewed the -- I again reviewed the operator's manual, the service bulletins that are here, the -- the maintenance manual section.
Do we want to go through each one of these?
Q Is it everything on the table that you reviewed in preparation for your deposition?
A Yes.
Q When did you review those materials?
A This week.
Q All right. And as vice president of engineering design for MCI, did you feel a sense of responsibility to
0178
review all the data available to figure out how this accident happened?
MS. DORMAN: Object to form.
A As I said, I thought we were -- we -- that's what I was trying to do.
Q (BY MS. RODRIGUEZ) But yet, as of June 9th, you hadn't read any of the depositions in the case, correct?
MS. DORMAN: Object to form.
A In June 9th, I may have not. I don't know. I got to read if I did or not --
Q (BY MS. RODRIGUEZ) Well --
A -- to rec-- to reassure my memory.
Q Sure. I'll get it out for you.
(Exhibit 26 marked)
Q On page 267 of your deposition, line 20:
Question: Have you read any depositions in this ca-- case?
Answer: No, I have not.
Do you see that as what I've marked as Exhibit 26?
A Yes.
Q So is that still a true statement that you hadn't read any depositions in the case as of June 9th?
A As of June 9th, I had not.
Q When did you first find out that you were going
0179
to be an expert witness for MCI?
A That was right before the June inspection.
Q And the June inspection was at the end of the month, right? June 30th?
A Approximately thereof, yes.
Q So it took MCI designating you as an expert before you had any interest in reviewing depositions in this case; is that true?
MS. DORMAN: Object to form.
A No, that's not true.
Q (BY MS. RODRIGUEZ) You didn't review the -- the depositions until after you found out you were going to

be designated as an expert; is that true?
MS. DORMAN: Object to form.
A No, it's not true.
Q (BY MS. RODRIGUEZ) Well, when did you review the -- the depositions if you hadn't reviewed them by June 9th?
MS. DORMAN: Object to form.
A I read them between then and June 30th, what I had.
Q (BY MS. RODRIGUEZ) How many depositions did you read in that time frame?
MS. DORMAN: Object to form.
A What I had at that time. And I think they were

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separated what I had at that time versus now. And whatever I had at that time, I -- I looked at them. I reviewed them.
Q (BY MS. RODRIGUEZ) And it's your testimony that it's just a coincidence in that time frame that you reviewed the depositions in this case, but it was unrelated to you being designated as an expert?
MS. DORMAN: Object to form.
A At that time, I didn't know I was going to be an expert. They had -- what I said is that that was when it was first discussed.
Q (BY MS. RODRIGUEZ) Well, have you ever been designated as an expert for MCI before?
A No.
Q Had you ever written a report before?
A No.
Q So you've been an engineer with MCI for how many years, sir?
A Since 1985.
Q So over 20 years?
A Yes.
Q And MCI never considered you to be an expert before, true?
MS. DORMAN: Object to form.
A I was not an expert before in an MCI case.

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That's correct.
Q (BY MS. RODRIGUEZ) Why are you an expert now? Do you know?
MS. DORMAN: Object to form.
A They asked me to based on the inspection in the end of June because I was involved in that inspection as I understand it.
MS. RODRIGUEZ: Okay. We've got to change the video, so let's do that now.
THE VIDEOGRAPHER: We're off the record at 2:00 p.m.
(Off the record from 2:00 to 2:11 p.m.)
THE VIDEOGRAPHER: We're on the record at 2:11.

Q (BY MS. RODRIGUEZ) Mr. Hoogestraat, I understand that you rely in part on Mr. Granat's testing, correct?
A I looked at some of Granat's videos, yes.
Q You didn't look at all of them, did you?
A No, I have not.
Q And you weren't there --
A I was not.
Q -- for the testing yourself?
A No, I was not.
Q Was there some reason you couldn't be there to

0182

personally watch it?
MS. DORMAN: Object to form.
A I do not recall.
Q (BY MS. RODRIGUEZ) As best I can tell from the data provided by your lawyer, there were 82 tests. Is that your understanding?
MS. DORMAN: Object to form.
A I'd have to look at the data. I don't -- I don't know. I have -- I have not seen all of it, so I don't know.
Q (BY MS. RODRIGUEZ) How do you know you haven't seen all of it?
MS. DORMAN: Object to form.
A Because some of it just came today.
Q (BY MS. RODRIGUEZ) Okay. Did you look at it this morning before we got started?
A No, I did not.
Q The videos that you looked at, there were 47 tests. Do you recall that?
MS. DORMAN: Object to form.
A There was -- there was 40-some tests. I don't remember the exact number.
Q (BY MS. RODRIGUEZ) Okay. Assume with me that the data indicates that there were a total of 82 tests. That would then mean you didn't look at 35 of the tests,

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correct?
MS. DORMAN: Object to form.
A If you assume one number is 47 and the other one's the other, yeah, it comes out to 35. Yeah.
Q (BY MS. RODRIGUEZ) Okay. So you're willing to make that assumption, right, Mr. Hoogestraat?
MS. DORMAN: Object to form.
A Well, subtracting those two numbers, that's what it comes out to. Yes.
Q (BY MS. RODRIGUEZ) So did you choose not to look at all the evidence or did your lawyer keep it from you?
MS. DORMAN: Object to form.
A I've -- I looked at the evidence. I saw the videos. I have not -- did not have a copy of the video. I saw the videos here earlier sometime. And then, no, I

have not seen the rest of it.
Q (BY MS. RODRIGUEZ) When did you see the videos?
A A month or so ago.
Q And who were you with when you watched the videos?
A John Dacus.
Q And what did you discuss about those videos?
A I was just looking at the videos. I mean, I don't remember what we discussed.

0184

Q There's a PDF document that's -- that was produced along with the videos that has some raw data. Did you see that?
A I saw some of the raw data.
Q Did you analyze it?
A I analyzed what I saw in the raw data and I believe, if I recall, Kevan Granat was on the phone when we were looking at some of that raw data.
Q What did you and Mr. Granat discuss?
A Again, I don't remember the details. I was asking him some questions on the -- on the data so I understood it.
Q Does this look like some of the raw data that you saw? I'll mark it as Exhibit 28.
(Exhibit 28 marked)
A That looks some of it. Yeah.
Q And that Exhibit 28, that helps you understand according to Mr. Granat that there were 82 tests that he performed, correct?
A Well, it says at the top of the page Test 82, so I'm assuming that's what it means.
Q Well, now, when you saw this a month or so ago because you were doing a thorough investigation and taking your responsibility as an expert seriously, did you ask Mr. Dacus or Mr. Granat, hey, where are the

0185

remaining 35 test videos?
MS. DORMAN: Object to form.
A I didn't know about 35 additional test vehicle -- videos at that time. I looked at the ones that were shown to me and I assumed they were complete.
Q (BY MS. RODRIGUEZ) Well, didn't you see on the videos themselves that they say what test it is?
A Yes.
Q So you would have known at the time you watched the videos that there were only 47 test videos, correct?
MS. DORMAN: Object to form.
A Yes.
Q (BY MS. RODRIGUEZ) And MCI is a multimillion-dollar company, right?
MS. DORMAN: Object to form.
A Are you referring in revenue?
Q (BY MS. RODRIGUEZ) Yes. Either revenue or profit either one.

MS. DORMAN: Object to form.
A Well, it wouldn't be profit. But in revenue, it would be a multimillion-dollar company.
Q (BY MS. RODRIGUEZ) And MCI has a test department?
A Yes.
Q And yet, all you did as vice president of
0186
engineering for MCI to find out if a driveshaft could hit a tie rod was move a driveshaft around in a bus that did not even have the same dimensions as the Americanos bus over a year after this accident occurred; isn't that true?
MS. DORMAN: Object to form.
A As I stated previously, we looked at the dimensions and then we did this in Los Alamitos.
Q (BY MS. RODRIGUEZ) And that's all you've done, correct?
A That's what we've done to date, yes.
Q All right. Let's go back to that exhibit we were looking at earlier. I believe it's 21.
MS. DORMAN: There was a side-by-side?
MS. PEREZ: Uh-huh.
THE WITNESS: I think it was just -- there was earlier.
MS. RODRIGUEZ: It's not long. Why don't we just run the whole thing? Run the first one first.
MS. PEREZ: I did, but she wanted to see side-by-side.
MS. RODRIGUEZ: Oh.
MS. DORMAN: Well, I just wanted to -- I -- I wasn't sure what else was on the disk.
Do you have any that -- of the actual
0187
motion or just slow motion?
MS. RODRIGUEZ: At this point, all I have is the slow motion.
MS. DORMAN: And then what's this -- what's the last video?
MS. RODRIGUEZ: This -- what it is on the disk is the two videos separate in order to make the PowerPoint presentation confined.
MS. DORMAN: Oh.
MS. RODRIGUEZ: And he looked at the PowerPoint.
MS. DORMAN: Okay.
MS. RODRIGUEZ: This is just --
THE WITNESS: This is one of the -- part of the video.
MS. RODRIGUEZ: Yeah. This is the first video in the PowerPoint and then --
THE WITNESS: It looks like they merged two videos together --
MS. RODRIGUEZ: Right.

THE WITNESS: -- on PowerPoint on a split screen is what -- what it looked like.
MS. DORMAN: Okay.
And that'll be Exhibit 21?
MS. RODRIGUEZ: Yes.

0188

MS. PEREZ: That's the second video.
Q (BY MS. RODRIGUEZ) Mr. Hoogestraat, you've now watched what we've marked as Exhibit 21. And that's the video that you saw earlier, a side-by-side comparison of what happens when a driveshaft separates uncontained in the tag axle support suspension and what happens when it separates in a driveshaft containment loop, correct?
MS. DORMAN: Object to form.
A I saw a video with a -- looked like an additional driveshaft guard where they disconnected at the transmission end. And then I saw a different video with the driveshaft without that guard, just with the suspension support.
Q (BY MS. RODRIGUEZ) And --
A That's what I saw.
Q And disconnected at the transmission end?
A Disconnected at the transmission end.
Q All right. Now, after watching the video of the driveshaft impacting the tie rod, are you still convinced it's physically impossible for the driveshaft to escape what you're calling the driveshaft guarding structure?
MS. DORMAN: Object to form. Asked and answered.
A As stated previously, I would have to review that. And as far as I know today, I'm holding with my

0189

opinion.
Q (BY MS. RODRIGUEZ) Well, after watching the videos and seeing the photos of all the witness marks on the other buses, do you still believe that the driveshaft did not unlock the tag axle and induce steer?
MS. DORMAN: Object to form.
A On what?
Q (BY MS. RODRIGUEZ) On the Americanos bus.
A Yes. It did not induce steer.
Q Do you still believe that the driveshaft did not unlock the Americanos tag lock?
A Yes. I do not -- I believe it did not unlock the Americanos tag lock.
Q Even after watching the video seeing it can happen and seeing photos of three other buses where it's happened, you still have no doubt in your mind that the Americanos tag axle lock did not come unlocked as a result of the driveshaft hitting the tie bar?
MS. DORMAN: Object to form.
Q (BY MS. RODRIGUEZ) Is that what you're telling this jury?
MS. DORMAN: Object to form.

A Well, yes. That's what I'm telling this jury. It did not come -- come unlocked until it went into the -- the median.

0190

Q (BY MS. RODRIGUEZ) So you're willing to ignore the evidence that the driveshaft is capable of escaping the tag axle suspension support and hitting the tie bar and unlocking the tag lock? You're willing to ignore that evidence and still hold your opinion that on the Americanos bus that's not what happened?

MS. DORMAN: Object to form.

A First off, I haven't even -- you've shown me a video. And what I told you is I would have to look into it further before we would change an opinion.

Q (BY MS. RODRIGUEZ) All right. So are you willing to -- to keep your mind open or is your mind made up that, nope, you know what happened and you know how that tag lock came unlocked on the Americanos bus?

MS. DORMAN: Object to form.

A As I stated previously, you showed me a video that I saw the first time. And I wanted to look at it further to see more information. I got to have more information than that one video and look at what -- what -- how that test was done, under what condition, what all was -- and then we just go from there.

Q (BY MS. RODRIGUEZ) Are you thinking now that maybe it would be a good idea for MCI to do their own test, similar test?

MS. DORMAN: Object to form.

0191

A As I told you, we will look at what -- since you've already done this, we will look at that and then we'll decide what we want to do from there.

Q (BY MS. RODRIGUEZ) Mr. Hoogestraat, the bottom line is the clock's ticking. You've told us you've got five days to go to NHTSA.

MS. DORMAN: Object --

Q You've now --

MS. DORMAN: -- to form.

Q -- been burdened with evidence that the tag axle lock assembly is defective. Are you now considering notifying NHTSA?

MS. DORMAN: Object to form.

A I have told you that we have five days when we know of a safety defect to notify NHTSA. We don't know of that at this time.

Q (BY MS. RODRIGUEZ) Well, the clock's ticking. You now have evidence that a driveshaft that fails at the transmission end can hit a steering component, the tie rod, a safety-critical piece as you've described, and you have evidence of that both from video and photos from other buses. Are you now considering notified NHTSA?

MS. DORMAN: Object to form. Asked and answered.

A As I said, we would notify NHTSA after we do our
0192
internal review of that. Then we will decide if we need to notify NHTSA. Based on a few pictures and a video would not constitute an adequate study before we would notify NHTSA.
Q (BY MS. RODRIGUEZ) Are you familiar with the safe harbor act -- safe harbor provision under the TREAD Act?
MS. DORMAN: Object to form.
A No, I'm not.
Q (BY MS. RODRIGUEZ) You're not aware that there's a provision for whistle-blowers for protection?
MS. DORMAN: Object to form.
A Could be. I -- I'm not aware of it.
Q (BY MS. RODRIGUEZ) If there were, would you like to avail yourself with that now that you have this evidence?
MS. DORMAN: Object to form.
You don't have to answer that, Virgil. It's harassing.
Q (BY MS. RODRIGUEZ) Are you following your attorney's advice and refusing to answer the question?
A Yes.
(Exhibit 27 marked)
Q All right. I'm going to hand you what I've marked as Exhibit 27. Can you identify this document for
0193
the record?
MS. RODRIGUEZ: Sorry.
THE WITNESS: Want to see it?
MS. DORMAN: I -- I know what it is. Thanks. I think it's the same thing. Yeah.
A It's a IMechE conference transaction. I'm not sure I pronounced it correctly. It's --
Q (BY MS. RODRIGUEZ) Where'd you get that document?
A Well, you just handed it to me. In regard to -- I'm not sure I understand your question. I'm sorry.
Q Oh, it's all right.
You've never seen Exhibit 28 before?
A Well, I ain't got 28.
MS. DORMAN: It's 27.
A I got 27.
Q (BY MS. RODRIGUEZ) 27.
A Yes.
Q Okay. Where did you get it?
A This is a report that came out of Randle Engineering when they were brought in as consultants on the E coach suspension.
Q So you got that from Randle Engineering?
A I said I saw it from Randle Engineering back in the '90s.
0194

Q And when did you find that document again in connection with this lawsuit?
A I saw it here recently. I don't know. I don't remember.
Q Did you go looking for it?
A No. I remember seeing it.
Q Did somebody produce it to you recently?
A Somebody showed it to me, yes.
Q Who gave it to you recently?
A I don't recall. I'm sorry.
Q Was it one of your lawyers?
A Could have been. I don't recall.
Q Well, how recently did you get it that you can't remember?
MS. DORMAN: Object to form.
A Within the last month. I don't remember.
Q (BY MS. RODRIGUEZ) All right. So you don't remember who gave that to you, but yet, you're relying on your memory for all your measurements and dimensions that you did last month at the exemplar coach inspection?
MS. DORMAN: Object to form.
A Yes.
Q (BY MS. RODRIGUEZ) Does that article provide you any insight in terms of this accident or this case?
MS. DORMAN: Object to form.

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A This is an E coach four-steer tag axle system that was worked on for the E coach.
Q (BY MS. RODRIGUEZ) Well, you brought it here with you today, right, Mr. Hoogestraat?
A Yes.
Q Okay. So does it provide any relevant information to this lawsuit?
A Not that I'm -- I've determined from it, no.
Q Why'd you bring it today?
A Because it's part of the stuff I reviewed.
Q Okay. Thank you.
MS. RODRIGUEZ: I'm going to pass the witness to Nick Dominguez.
MS. DORMAN: You all represent the same client, but he's going to ask questions on behalf of --
MS. RODRIGUEZ: He's not going to ask the same questions. He's going to ask different questions.
MS. DORMAN: On behalf of which client though?
MS. RODRIGUEZ: He's going to ask -- for purposes of the deposition, he's going to ask on behalf of Ms. Morado in her capacity as a defendant.
MS. DORMAN: Ah. So he is acting as the bus driver's counsel.
THE WITNESS: Oh, okay.

0196

MS. DORMAN: Okay? But he represents --
MS. RODRIGUEZ: I'm sorry.

MS. DORMAN: -- Greyhound and Americanos as well.
MS. RODRIGUEZ: He -- he's here on behalf of Greyhound for purposes of this deposition.
MS. DORMAN: Oh.
Okay. Ignore that. It's just Greyhound --
THE WITNESS: Oh.
MS. DORMAN: -- even though all three of them represent all three clients.
I probably should object to that because I think the Rules provide that if the representation is the same, only one lawyer gets to ask the questions. But since you haven't used up your six hours, I'll let you ask questions.
MR. BULLION: Melissa, I can't really hear what's going on. Is another -- another lawyer for the same defendant about to ask questions?
MS. DORMAN: Yes.
MR. BULLION: I object to that on behalf of ArvinMeritor. It's not permitted by the Rules.
MS. DORMAN: I didn't think it was. I don't have a rule book in front of me.
MR. BULLION: No, it definitely is not.

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Whatever lawyer it is made an appearance on behalf of Americanos, you can't claim to be representing Greyhound or Morado and both ask questions. I wouldn't allow it if it was me.
MR. RAMIREZ: Plaintiffs will join in the objection.
MS. DORMAN: All right. Then we will join in it as well. So --
MR. DOMINGUEZ: Which -- which plaintiffs join in the objection?
MR. RAMIREZ: My plaintiffs. The Aguilar plaintiffs.
MR. DOMINGUEZ: Aguilar plaintiffs.
MS. DORMAN: So does Ms. Rodriguez want to continue?
THE VIDAURRI: She stepped out of the room.
MR. DOMINGUEZ: Can we go off the record for a second?
THE VIDEOGRAPHER: We are off the record --
MS. DORMAN: Actually, no. Let's stay on because time is being used while my client sits here and waits on you-all to get your act together, so.
(Ms. Rodriguez enters the room)
MS. DORMAN: Ms. Rodriguez, the parties have objected to another attorney for the same clients

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asking questions in the deposition.
MS. RODRIGUEZ: It's perfectly proper. We've got six hours. We've got three defendants. We're not going to ask repetitive questions. So let's proceed.

MS. DORMAN: Gentlemen?
MR. DOMINGUEZ: I would note that only one group of plaintiffs has objected at this point.
MS. DORMAN: Are you the last one of the three of you to ask questions?
MR. VIDAURRI: No.
MS. DORMAN: Oh, well, then no. We're not going to do this.
MS. RODRIGUEZ: All right. Let's see if we can get a judge on the line.
MS. DORMAN: Hey, Tom?
MS. RODRIGUEZ: Are you refusing to let your witness answer questions?
MS. DORMAN: Absolutely not.
MR. BULLION: I can't -- I don't have a -- I don't have a witness there, but I'll tell you -- I'll tell you my position. And that is it's improper to have multiple lawyers for the same party question the witness. And I'm going to object to any -- if there's a use of anything that -- anyone other than Ms. Rodriguez who's representing either Americanos, Greyhound or Morado

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asked, unless the plaintiffs' lawyer for Ms. Morado wants to ask questions. I think that would be appropriate.
But if -- but in terms of one of the defense lawyers for those three parties are joined at the hip and -- and I don't think -- I don't think any of the questions that get asked will be -- will be usable at trial. And that's certainly going to be my position.
MS. RODRIGUEZ: Well, there's no prejudice to the witness, so -- and you haven't cited any authority that multiple lawyers can't ask questions.
MR. BULLION: Well, it's in the --
MS. RODRIGUEZ: We haven't exceeded our time.
MR. BULLION: It's in the Texas -- it's in the Texas Rules of Civil Procedure. And I'm sitting in my chair at home watching TV and I don't have that in front of me. But I assume even you, Ms. Rodriguez, probably knows about the Texas Rules of Civil Procedure.
MS. RODRIGUEZ: All right. Well, I'll be happy to take it up with the judge, but I'd like to proceed unless Ms. Dorman's not going to allow her witness to answer questions. But there's not prejudice to the witness. We're not out of our time. There's three different discreet defendants. And it's no different than what's done in toxic tort cases, medical

0200

malpractice cases.
I've done it before without objection. Quite frankly, I'm -- I'm surprised that there would be an objection. So I suggest we just proceed and not waste any more time on this issue.
MS. DORMAN: I'm going to look for the

rule, Tom, and I'll lodge the same objection. And as -- I'll see how it goes, if that's okay with everyone else. And if we get the same harassing and repetitive and loud questioning that we had with Ms. Rodriguez, then we'll -- we'll shut it down.

MR. BULLION: No, I'm -- I'm not -- I can't -- I don't have the ability -- I'm not there. I don't have the ability to tackle any lawyer or anything like that. I'm just putting you on notice that my position is it won't -- you won't be able to use it in any way, shape or form at trial or in response to any motion.

MS. DORMAN: I -- I agree with that. I -- I lodge the same objection.

MR. RAMIREZ: We'll reserve that or we'll lodge that same objection on behalf of the plaintiffs.

MR. DOMINGUEZ: With the objections being lodged, can we proceed?

MS. DORMAN: Please.

0201

EXAMINATION

BY MR. DOMINGUEZ:

Q Mr. Hoogestraat, my name's Nick Dominguez and I represent Greyhound Lines, Inc.

A Yes.

Q Good afternoon.

A Good afternoon.

Q I'd like to start off by asking you a few questions about some calculations. How much force is exerted in a driveshaft unco-- uncoupled at a transmission end at 70 miles per hour and at 1800 RPM speed and it hits the latch arm assembly which you were calling the -- the guarding structure?

A I don't --

MS. DORMAN: Object to form.

A -- have it calculated up.

Q (BY MR. DOMINGUEZ) Isn't it that a critical analysis of the integrity of the latch arm assembly to -- to serve the secondary purpose of a guarding structure and you did not calculate that?

A We have not calculated --

MS. DORMAN: Object to form.

A I have not calculated that.

Q (BY MR. DOMINGUEZ) If you're calling the latch arm assembly a guard, wouldn't you consider force of a

0202

flailing driveshaft on the guard in your analysis of the guard?

MS. DORMAN: Object to form.

A Could you repeat that question, please?

Q (BY MR. DOMINGUEZ) Sure. And thank you for asking.

If you are calling the latch arm assembly a guard, wouldn't you consider force of a fai-- flailing

driveshaft on the guard in your analysis of the guard?
MS. DORMAN: Object to form.
A You could.
Q (BY MR. DOMINGUEZ) Okay. Since you have not done those calculations, can we run through some general principles?
A Yes.
Q Okay. We agree that force equals mass times acceleration?
MS. DORMAN: Object to form.
A That's a standard formula, yes.
THE REPORTER: I'm sorry. What?
THE WITNESS: That's a standard formula, yes.
Q (BY MR. DOMINGUEZ) Force equals mass times acceleration?
A Yes.

0203

Q And we -- we've talked about earlier in this deposition that the weight of the driveshaft is about 80 pounds?
A Total. Total --
Q Okay.
A -- weight.
Q What would be the acceleration of the driveshaft at 70 pounds? And I've got --
A The acceleration?
Q I'm sorry. The -- the acceleration of the driveshaft. What would be the acceleration of the driveshaft at 70 miles per hour?
MS. DORMAN: Object to form.
Q (BY MR. DOMINGUEZ) And I've got something to mark as --
MR. DOMINGUEZ: What's the next number of the exhibits? I'm sorry.
MS. DORMAN: I think twenty --
THE REPORTER: 29.
MS. DORMAN: -- nine.
THE REPORTER: There should be stickers over there.
MR. DOMINGUEZ: I think those are done.
THE REPORTER: There should be 29 through 36.

0204

MR. DOMINGUEZ: We'll mark this as Exhibit 29.
(Exhibit 29 marked)
MS. DORMAN: Thank you.
Q (BY MR. DOMINGUEZ) Now, I'll represent to you these are calculations by Aaron Jones. I believe it's the bottom half. I've got driveshaft. Do you see there?
A Oh, okay. Sorry.
Q Do you see at the very bottom where it says bold: Force, 14 -- 14,481.25 pounds of force?

A Yes.
Q Are Mr. Jones' calculations reasonable?
MS. DORMAN: Object to form.
He's not going to answer that question without you providing him a calculator to do them himself.
A Well, first off, yeah, I'd have to recheck the calculation. But secondly, he uses a weight of 75 pounds. As I under-- and this is the whole driveshaft, you say, hitting it? Is that what he's trying to say here?
Q Well, sir, it's -- it's -- those -- those are the calculations that Mr. Jones has seen.
Have you seen those before?
A No, I have not.

0205

Q You've not seen those before.
A I'm just saying that he -- he shows the whole weight of 75 pounds. Is he trying to say that the whole driveshaft hit it, the whole thing, and it was disconnected on both ends which would correspond to the 75 pounds?
Q Well, isn't that --
A Is -- is that what --
Q Isn't that --
A -- he's trying to --
Q -- the midpoint -- isn't that the midpoint between 70 and 80 pounds for the weight of the driveshaft?
MS. DORMAN: Object to form.
You need to provide the witness the information he's requesting so he can answer your first question.
MR. DOMINGUEZ: A calculator?
MS. DORMAN: No. The question about what -- from what is he judging the weight of the driveshaft.
A He's saying the weight of the driveshaft is 75 pounds, right?
MS. DORMAN: I realize that's not in the script, but --

0206

MR. DOMINGUEZ: Well --
MS. DORMAN: -- if you have the answer...
MR. VIDAURRI: All right. Let's --
MR. DOMINGUEZ: Okay. Let's --
MR. VIDAURRI: -- calm it down.
A I'm having difficult--
Q (BY MR. DOMINGUEZ) Let's --
A Go ahead.
Q So you're saying that you cannot ascertain the reasonableness of that calculation?
A No. I just -- I cannot at this moment.
Q Okay. When -- when is the last time you did

these types of calculations --
MS. DORMAN: Object to form.
Q -- in your investigation of -- in -- in your capacity as an expert witness in this case?
MS. DORMAN: Object to form.
A As stated previously, I've not done these calculations.
Q (BY MR. DOMINGUEZ) You've not done that type of calculation?
A That's correct. That's what I said.
Q Have you -- have you ever done them while you've been employed at MCI?
MS. DORMAN: Object to form.

0207

A I've done numerous calculations when I'm employed at MCI. I don't recall doing this calculation though.
Q (BY MR. DOMINGUEZ) Okay. Now let's talk about the -- the -- the force the top latch holds. Can you agree with me that the force exerted by the top -- by the latch cylinder is equal to the area of the bore of the cylinder times the air pressure applied to it?
MS. DORMAN: Object to form.
A The downward force of the latch cylinder? You're -- could you restate that again? I believe --
Q (BY MR. DOMINGUEZ) Can you -- can you agree with me that the force exerted by the latch cylinder is equal to the area of the bore of the cylinder times the air pressure applied to it? The force that's used to keep it closed or locked. The latch.
MS. DORMAN: Object to form.
A No. No. That is the -- that is the force from the air pressure.
Q (BY MR. DOMINGUEZ) Okay.
A Plus you have an additional spring on there.
Q Plus additional spring?
A Yes. He's using the area -- the force is P -- P -- P times A is what he's using. Excuse me. Anyway, he's using the standard air pressure calculation, but he

0208

just forgot the spring.
Q Do you know what the -- do you know what the bore of the top latch cylinder is?
A Not off the top of my head.
Q Can we assume that is a 4-inch bore?
A It may be.
Q What is the air pressure of the coach?
A The air pressure is set at around 120 psi, but it can vary up and down slightly.
Q But 120 psi would be --
A That's nominal.
Q Okay. If you assu-- assume that a 4-inch diameter bore and 120 psi, can you calculate the force that the top latch holds?

MS. DORMAN: Object to form.
A In the forward direction, the top latch has a latching -- mechanical latching device that it goes into in addition to the air cylinder. So, no, you -- you -- that again is incomplete.
Q (BY MR. DOMINGUEZ) Well, what about the cal-- what about the -- well, can you agree that the -- just a second.
Can we take the equation for the area of the circle, which is P times R squared, and mul-- and multiply it by the air pressure in the bore of the latch

0209

cylinder to find out the force the latch holds?
MS. DORMAN: Object to form.
A And, again, as I said, when it's in the forward position latch, okay, for the -- for caster steering going forward, in addition to the cylinder you have a mechanical latch.
Q (BY MR. DOMINGUEZ) Is this the same thing -- you said spring earlier. Is this the same thing?
A No. You were referring to previously the tag axle lock has in addition to it the cylinder and it has a spring. When you referred to the latch, I believe you were referring to the latch at the top --
Q Uh-huh.
A -- which has the caster steer.
Q Right.
A And that has a mechanical latch in addition to the air pressure going in the forward direction. And therefore, if you're just calculating the air, the volume of the air itself, you're correct. You're correct. Like I said, you're forgetting the latch, mechanical latch.
Q Well, let's just go on the volume of the air for now.
A Okay.
Q So if you have 3.14 times 2 squared times 120, I'll represent to you that'll be 1,507.2.

0210

MS. DORMAN: No representations. He needs a calculator if you want him to answer questions about calculations.
Q (BY MR. DOMINGUEZ) Can you do that longhand, sir?
MS. DORMAN: He's not going to do that. You need to give him a calculator.
A If -- are you saying it's the area of the cylinder times the air pressure --
Q (BY MR. DOMINGUEZ) But you're allowed to make assumptions, can't you?
MS. DORMAN: He didn't finish his answer.
MR. DOMINGUEZ: Okay.
A The force is the area of the piston, which is pi R squared times the air pressure. Then you multiply those two numbers and that's the force of the piston.

Okay?
Q (BY MR. DOMINGUEZ) Okay.
A I mean, I think that's what you read off.
Q Right.
A And you'd need a calculator just to calculate and make sure the number you came up with is correct. That's all. And I'm not sure why there's an assumption, but that's -- that's what it is.
Q So you're not willing to assume that the number

0211

would be 1507 --
MS. DORMAN: Object --
Q -- point 2?
MS. DORMAN: Object to form.
A It may be. I'm just saying you got to mul-- that's how you do it and that's what the number could be. I don't know. You just have to multiply it out.
Q (BY MR. DOMINGUEZ) Okay. Here's an iPhone calculator.
MS. DORMAN: Okay. What do you want him to multiply?
Q (BY MR. DOMINGUEZ) This is pi -- it's 3.14 -- times 2 squared -- I believe that's 4 -- times 120.
A Times -- you said it was 4-inch diameter or radius?
Q 4-inch diameter. That'd be a 2-inch radius, right?
A 2-inch radius.
MS. DORMAN: So it's not 2 squared?
MR. DOMINGUEZ: Well, it's 2 squared, which equals 4.
MS. DORMAN: Okay.
Q (BY MR. DOMINGUEZ) I'm not sure that thing can do squares, so.
A Well, the square of 4 is obviously 16.

0212

Q Well, the square of -- square of 2 is 4. 2 times 2.
A Pi R squared. Right.
Q So have you done the calculation of 3.14 times 2 squared times 120?
A 75721. Is that what you came up with?
Q 3.14 times 4 times 120?
A 3.14.
Q 3.14.
A Times 4.
Q Times 4.
A Times 120.
Q Times 120.
A Is that what you came up with? Boy, this is strange. This -- that number can't be right. Clear, clear, clear.
MS. DORMAN: Maybe clear it out and start over.

A I get 1,507. Is that correct?
Q (BY MR. DOMINGUEZ) .2?
A Yeah.
Q That'd be what that is.
A Is that the number you --
Q Yes.
THE WITNESS: I don't know whose this is.

0213

MS. RODRIGUEZ: It's mine.
THE WITNESS: Can I give it back to somebody, please?
MS. RODRIGUEZ: Thank you.
MR. DOMINGUEZ: Thank you.
Q (BY MR. DOMINGUEZ) So is that the first time that you had done that calculation?
MS. DORMAN: Object to form.
A Personally? I don't know. I don't remember. That's a -- that's a standard air pressure calculation.
Q (BY MR. DOMINGUEZ) In your investigation in this case and your review as a purported expert in this case, was that the first time you did that calculation?
MS. DORMAN: Object to form.
A Within the last two months, I have not done that calculation.
Q (BY MR. DOMINGUEZ) And had you ever done this calculation before?
A I may have. This bus has been around since 1992. I may have. I don't -- I don't recall.
Q Did you take statics in college?
A Yes.
Q Do you know what a free body diagram is?
A Yes.
Q Isn't it true that a free body diagram is a way

0214

of representing the forces applied on a system?
MS. DORMAN: Object to form.
A Can be used for that, yes.
Q (BY MR. DOMINGUEZ) How do you calculate a momentum?
MS. DORMAN: Object to form.
A Momentum is mass times velocity, if I recall correctly.
Q (BY MR. DOMINGUEZ) Can you calculate the momentum on the latching cylinder associated with the impact created by the driveshaft impacting the lower portion of the latch arm assembly/tag axle suspension support?
A Could --
MS. DORMAN: Object to form.
A -- you repeat that again?
Q (BY MR. DOMINGUEZ) Can you calculate the momentum on the latching cylinder associated with the impact created by the driveshaft impacting the lower portion of the latch arm assembly/tag axle suspension

support?
MS. DORMAN: Object to form.
A I'm -- I'm sure there's a way to do that, I think. I'm trying to understand your question. I'm sorry. Could you say it slower?

0215

Q (BY MR. DOMINGUEZ) Okay. Can you calculate the momentum on the latching cylinder associated with the impact created by the driveshaft impacting the lower portion of the latch arm assembly/tag axle suspension support?
A I believe you can, yes.
Q And Aaron Jones' calculation of 15,000 pounds, let's go back to that.
A What's 15,000 pounds?
Q That's approximately 15,000 pounds. Wasn't that what I gave you as Exhibit --
A Oh, on this? Yes, on the driveshaft it's approximately 15,000 pounds.
Q And if you multiply that by 3 feet, which is the distance between the bottom of the tag axle suspension support latch arm assembly and the latch, what would that give you roundabout if it's 15,000 and you -- it's 3 feet?
MS. DORMAN: Object to form.
A Obviously about 45,000.
Q (BY MR. DOMINGUEZ) Do you need a calculator for that?
A No.
Q Okay. So then we are potentially going to impact -- so would you agree that we are potentially

0216

going to impact the latch arm assembly, which you are now calling the -- the guarding support, with approximately 15,000 pounds of blunt force?
MS. DORMAN: Object to form.
A Based on his calculation, the way he did it, that's what it was. That's what he said.
Q (BY MR. DOMINGUEZ) And if you transfer that 15,000 pounds of blunt force up to the latch cylinder, you now have 45,000 foot pounds of force trying to unlock the latch cylinder?
MS. DORMAN: Object to form.
A That's one way to calculate it, yes.
Q (BY MR. DOMINGUEZ) And if you only have --
A Based on the 15,000.
Q Okay. If you only have that number we talked about before, 1,507.2 pounds of force trying to hold it in locked position and you are asserting 45,000 foot pounds of force trying to unlock it, which is going to win?
MS. DORMAN: Object to form.
A As I stated previously, in that cal-- that analysis you did, you forgot the mechanical latch.

That's up there also.
Q (BY MR. DOMINGUEZ) If you overpower the top latch cylinder, what happens when you unlock it and you
0217
rotate the caster into an unlocked position?
A As I stated prev-- you have a mechanical latch up there in the caster forward position when it's there, and therefore, that question is not valid, I don't think. Unless you want to read it again.
Q If you overpower the top latch cylinder --
A Yes.
Q -- what happens when you unlock it and rotate the caster into an unlocked position?
MS. DORMAN: Object to form.
A If you do mecha-- you -- you mechanically unlatch it and you -- you -- the -- and you override the top lock cylinder? Is that what you're saying?
Q (BY MR. DOMINGUEZ) Right. That's what I'm asking.
A Then the --
Q What happens?
A The caster would change.
Q Isn't it true that the top caster is forward and the bottom of the -- the tag axle suspension support/latch -- latch arm assembly casters away towards the re-- rear?
MS. DORMAN: Object to form.
A Can you --
Q (BY MR. DOMINGUEZ) Sure.
0218
A -- ple-- please ask that again?
Q Sure.
Isn't it true that the top casters forward and the bottom of the tag axle suspension support/latch arm assembly casters away toward the rear?
MS. DORMAN: Object to form.
A Well, going forward, yes, I think. I'm having a hard time with the questions, but --
Q (BY MR. DOMINGUEZ) And the gap between the bottom of the tag axle support suspension/latch arm assembly is increasing as the bottom is moving backward and the top casters forward?
MS. DORMAN: Object to form.
A Can -- please read that again.
Q (BY MR. DOMINGUEZ) Sure.
So the gap betw-- so is it true that the gap between the bottom of the tag axle support suspension --
And you're calling this -- I think you're calling this a latch arm assembly.
-- if the tag axle support suspension/latch arm assembly is increasing as the bottom is moving backwards and the top casters forward?
MS. DORMAN: Object to form.

A Oh, yeah. Slightly. But it's rotating around
0219
the centerline of the axle, so it's very slight.
Q (BY MR. DOMINGUEZ) Your testimony is it's slightly?
A (Nods head.)
Q Did you ever consider this factor before we asked in your -- in your expert -- in your purported expert opinion in reviewing this case, did you ever consider this before we asked it to you today?
MS. DORMAN: Object to form.
A Yeah. We looked at how much that is.
Q (BY MR. DOMINGUEZ) Did you look at that when you were checking the geometry of whether a driveshaft could impact the tie rod or the tag axle lock assembly?
A No, we did not because we realized, as I said previously, it's only a very small change.
Q Okay. Now, did you -- now, you just saw that -- the -- the driveshaft containment video, didn't you?
MS. DORMAN: Object to form.
Q (BY MR. DOMINGUEZ) The video that Ms. Rodriguez just showed you.
A I -- I just --
MS. DORMAN: Object to form.
A I saw the video Ms. Rodriguez showed us, yes.
Q (BY MR. DOMINGUEZ) The latch unlocks, doesn't it?
0220
MS. DORMAN: Object to form.
A The latch -- piece unlocked?
Q (BY MR. DOMINGUEZ) Wait. Sorry. I'm sorry.
The latch unlocks, doesn't it? That's the question.
A I don't -- the --
MS. DORMAN: Object to form.
A -- upper -- the latch for the caster unlocks? I don't know. It may have. I -- I couldn't tell that from the video, but it may have.
Q (BY MR. DOMINGUEZ) And the latch on the accident bus is unlocked, isn't it?
MS. DORMAN: Object to form.
A Yes, it is.
Q (BY MR. DOMINGUEZ) Okay. Okay. I'm going to mark Exhibit 30.
(Exhibit 30 marked)
MS. DORMAN: Yep.
Q (BY MR. DOMINGUEZ) And do you recognize that document?
A Yes.
Q And what is it?
A It's my resume.
Q Is that the one that you provided to your attorneys to provide to -- to counsel in this case?
0221

A Yes.
Q Okay. And can we go through some of the admin stuff? It shows you -- you have a Bachelor's of Science in mechanical engineering?
A Yes.
Q Do you hold any post-baccalaureate degrees?
A No.
Q Do you have any -- let's back up a little bit.
What was your coursework in mechanical engineering at South Dakota State University?
MS. DORMAN: Object to form.
A Coursework was in mechanical design.
Q (BY MR. DOMINGUEZ) And is that a subspecialty of --
A Not at that time. You focused -- at that time, you could -- in mechanical engineering there was -- basically, you could kind of focus on manufacturing or -- or post-related or -- or design. At that time, that's what they had.
Q And you said you didn't have any post-baccalaureate degrees. Did you begin any post-baccalaureate coursework in mechanical engineering?
A I did FEA analysis. I did some other -- other courses, but I never completed a post-bacc degree.
Q FEA analysis, what's that?

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A Finite element. That was training that was coming out at that time.
MS. DORMAN: Finite element.
THE WITNESS: Analysis.
A That's training that comes out at that time.
Q (BY MR. DOMINGUEZ) And through which university was that through?
A No, that was general training. That was at a -- that was a training company that set up. Finite element was coming in at that time and they were training people, engineering personnel on the -- that technology.
Q Okay.
THE REPORTER: Can you speak up a little? I'm having trouble hearing you.
THE WITNESS: Oh, I'm sorry.
THE REPORTER: Thank you.
Q (BY MR. DOMINGUEZ) Okay. Looking at your CV, would you say that it fairly and accurately states your experience?
MS. DORMAN: Object to form.
A Roughly, yes.
Q (BY MR. DOMINGUEZ) I notice it didn't have any publications on it. Did -- are there any publications that are omitted from your CV?
A I did not -- have not done any publications.

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Q Either in general or that you would use to rely on upon your testimony of this case?

A That's correct. Either way.
Q Any presentations that you have done?
A Well --
MS. DORMAN: Object to form.
A -- that's a broad statement. You do presentations -- internal presentations all the time. Presentations in regard to what?
Q (BY MR. DOMINGUEZ) Presentations in regard to trade organizations.
A I have not given presentations to trade organizations.
Q Okay.
A Not that I recall.
Q I notice it does not have any research experience. Did you -- have you conducted any independent research through -- through your work in getting your Bachelor's of Science in mechanical engineering?
MS. DORMAN: Object to form.
A No, we did not do any what you call re-- research. We had an engineering project that we were assigned, but I would not call that research.
Q (BY MR. DOMINGUEZ) No independent -- and after

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your -- your time at South Dakota State University, any independent research papers or projects that you submitted for publication?
A No, I did not, as stated previously.
Q Okay. Any teaching experience?
A No, I have not done any teaching.
Q Now, going to your resume or your CV, vice president of engineering design. And it lists -- I'm just going to say the words at the very beginning of each bullet point. Advise on designs, work with standards, review design, participate in planning and support regulatory affairs.
A Yes.
MR. DOMINGUEZ: These are the -- these are the first bullets on -- first few words in the bullets.
MS. DORMAN: Okay.
Q (BY MR. DOMINGUEZ) Are these all -- do these encompass all of the work that you current-- that you are currently responsible for at MCI?
MS. DORMAN: Object to form.
A No.
Q (BY MR. DOMINGUEZ) Is there anything else that you're responsible for -- is there anything else that you are responsible for that's not on here?
A I get assigned different things all the time. I

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mean, so -- I mean -- I mean, I do different things all the time. This is just a general outline.
Q Well, are any of those things that you're assigned, would any of those be applicable to the case at

hand? Would -- let me rephrase that.
Would any of the things that you're assigned help you in studying and investigating the case at hand?
A At this --
MS. DORMAN: Object to form.
A -- time, no. Not as assigned at the -- at this time. The only thing that I'm supporting this -- on this case, on -- on this thing, on this incident, I'm doing the -- going to these inspections. But that's not listed here either because that is just something that's assigned as part of your duties, just like other things are done. This is just a general outline.
Q (BY MR. DOMINGUEZ) Going back further, vice president of engineering. That's 2002 to 2009. And then 1995 to 2002, you were director of engineering at MCI.
Would it be fair to say that, you know, these responsibilities that you have in these bullet points: Responsible for consolidation, established program -- and I'm just reading the first few words -- developed engineering work, initiated training of

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engineering personnel and worked with government agencies, are these managerial or administrative positions or are these actually practicing engineering positions?
MS. DORMAN: Object to form.
A Well, you do both. There's -- there's -- certainly there's some in administrative as all engineering has administrative. And there's also you do some actual engineering work. So you do some combination.
Q (BY MR. DOMINGUEZ) And I see under director of engineering from 1995 to 2002 you managed 100 engineers?
A At that time we did, yes.
Q And so I'm curious as to the breakdown of your administrative work versus your actual engineering work. What percentage?
A That changes. It varies. It can be up as high as -- administrative could be as high as 60, 70 percent. It could -- and then depending on what you're working on, it could be only 20, 30 percent. It just varies over time of what you're working on and what stage in the programs you're at.
Q Well, would it be easier to go -- to go back in time through these blocks of years, 2009 to the present, and categorize --

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A I don't know what --
Q -- your percenta-- your percentage of administrative work from 2009 to the present?
MS. DORMAN: Object to form.
A Well, 2009 to the present, mostly I work -- I -- I go through detailed designs with the engineers. That's

some of the work. I do some standards work. I review design plans and review the analysis. I do some of the -- am involved in the planning stuff. I also do some of the regulatory stuff. I'm not sure I understand your question. It -- it varies from week to week --

Q (BY MR. DOMINGUEZ) Well --

A -- depending what you're working on.

Q Well, and you were basing your opinions in your expert report on your experience. And that's what --

A That's correct.

Q That's -- do you understand that we're trying to get at what your experience is as an engineer?

A Well, I've been an engineer since -- since I got out of -- out of college in 1972.

Q Well, but you mentioned earlier, I think, that you were not involved in the design of the tag axle lock system.

A That's correct. I was not. I was not involved in the tag axle lock system, which that was done in

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around 1992. And if you look in there, I was -- I was director of engineering at TMC at that time.

Q And you mentioned -- and you also mentioned that you had not done some of the cal-- when -- when I walked through earlier in this deposition some of the calculations, you had not walked through some of those calculations.

A That's correct.

MS. DORMAN: Object to form.

Q (BY MR. DOMINGUEZ) Would --

A At this time, I have not.

Q Would a reasonable engineer have walked through some of those calculations?

MS. DORMAN: Object to form.

A Some engineers would have. I did not.

Q (BY MR. DOMINGUEZ) Would you say that you did not because you are more of an administrator now than you -- than a practicing engineer?

MS. DORMAN: Object to form.

A No, I disagree. I think every-- if you're an engineer, you're an engineer and you do engineering work and you do the calculations as you see appropriate.

Q (BY MR. DOMINGUEZ) And so I don't think I saw. What calculations did you do for your expert testimony today? Did you bring your working file?

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A I did not bring -- I -- as I stated, I have not done any calculations on this, other than what I previously discussed in regard to the measurements that we did. Measurements on the exemplar bus and then the drawings. Reviewed the drawings.

Q Okay. Let's get back to your report.

In the last page of your report --

MS. DORMAN: Well, wait. We don't have it

in front of him. Let's find it.
It's been marked as an exhibit, so it should be over --
MR. DOMINGUEZ: Aren't those marked exhibits?
MS. DORMAN: Well, yeah. But these aren't his report. Those are just pictures and --
THE WITNESS: It was here earlier.
MS. PEREZ: It was marked Exhibit 10.
MS. DORMAN: Yeah. Exhibit 10. This is just part of his file.
THE WITNESS: Is it over there? I think that's it.
Q (BY MR. DOMINGUEZ) This is Exhibit 11. Is that the one that is off on the font that was provided or is that the correct one?
A I think this is the one that's on the font --

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Q Okay.
A -- that matches the other --
Q Okay. Let's go --
A -- fonts that you have.
Q Okay. Let's go to page 7 of 7 of your report.
A Okay.
Q And I am looking at number 7: Information obtained from other experts regarding testing and analysis of matters relating to the subject coach and its component parts and assemblies.
A Yes.
Q We talked a little bit about what all you relied upon.
A Yes.
Q And it'd be easier if you had your -- your notes to sort of go through and see what -- what you were -- what you were putting together, but let's list what other experts you relied upon in -- in your -- in your report.
A I relied on Calyia.
MS. DORMAN: Cayias.
A Cayias. Excuse me. It's Cayias.
Q (BY MR. DOMINGUEZ) Cayias.
A I relied on Ruboca [sic]. Greg Wright when he was working with me on the inspection. Kevan Granat when I looked at some of the videos.

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Q And those -- those were -- and how many videos again were they that you looked at?
A At that time, I believe there was like 47 of them, if I believe the numbers, but I'm not exactly sure if that's the correct number.
Q So it was some of the videos?
A It was not -- it's apparently not complete videos.
Q Okay.
A Let's go through this.

THE WITNESS: Is this the before or after stack? This is the before --
MS. DORMAN: This is --
THE WITNESS: -- stack.
MS. DORMAN: No, I think this is after.
THE WITNESS: That's the after. Okay.
MS. DORMAN: Yeah. This is the after stack. So that's the before stack.
A Looked at E. Cox's information on the evidence on the -- found on the roadway. Looked at the photos taken from Harold Zuschlag.
Q (BY MR. DOMINGUEZ) Photos of who?
A Harold Zuschlag. It was in the stack.
Q Okay.
A The information provided from the Texas

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Department of Safety. Also the photos and video as well as the notes from the inspection on June 30th to July 1st.
Q These are your notes from the inspection or --
A Yes.
Q I'm sorry.
A Yeah.
Q Okay. And those are here?
A I'm sure they are. I supplied them.
Q Okay.
A Bob Ruboca's inspection that he -- that was done on January 21st. Those are pictures. Rucoba's notes.
THE REPORTER: I'm sorry. I can't hear you. I didn't hear what you said.
THE WITNESS: Oh, I'm sorry.
Bob Ruboca's photos and notes from the January 21st inspection.
MS. DORMAN: Actually, it's Rucoba, R-u-c--
THE WITNESS: Rucoba.
MS. DORMAN: -- o-b-a.
THE WITNESS: This goes over here.
A And I think I read the accident records from Trooper Kellert.
Q (BY MR. DOMINGUEZ) Accident records from -- from who?

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A It says Trooper Kellert.
Q Kellert.
I've got one, two, three, four, five, six, seven, eight, nine things.
A Also went through the operator's manual, the --
THE WITNESS: Oops, these are falling down.
A The maintenance manual representative section of the air system. Also the -- the electrical -- reviewed the electrical.
Q (BY MR. DOMINGUEZ) And I think we can speed things up. Your -- your last page has -- has all the stuff that you reviewed in your report, right?

A I think -- believe so. Yes.
Q And there are 44 items listed?
A Yes.
(Exhibit 31 marked)
Q Okay. Can I hand you a couple of things? This is Exhibit 31.
MS. DORMAN: Are those from Dr. Longoria's file?
MR. DOMINGUEZ: Yes.
MS. DORMAN: Yeah.
(Exhibit 32 marked)
Q (BY MR. DOMINGUEZ) And Exhibit 32.
MS. DORMAN: Yeah.

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Q (BY MR. DOMINGUEZ) And have you seen those before?
A Yes. I saw this here recently.
Q And did you review those in preparation for your report?
A I don't believe so. If you look in the records, I don't think that was in there.
Q Okay. Now that you've gotten a chance to review that, is there any -- do you have any comments on that -- those documents?
MS. DORMAN: Object to form.
A He did predominantly use some of the calculations which is commonly used that he used as a basis of the AM General Transbus, which is a low-floor bus. And it was done -- but then he also looked like he'd used some of the information from Randle. And it was difficult for me to determine if he used that or if he used low-floor bus information because the two are dramatically different.
MS. DORMAN: Can you spell that for the court reporter? Lofur?
THE WITNESS: Low-floor.
MS. DORMAN: Oh.
A The main general bus is the low-floor bus --
Q (BY MR. DOMINGUEZ) Is that an --

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A -- that they --
Q -- acronym for something?
A Yeah. It's a transit bus. It has a very low floor. The floor is about four -- 14 inches approximately thereof off the ground. Okay? And it's a very common bus in transit buses today.
This was part of the Transbus program that was done by the U.S. government. And this was where that -- this is from that low-floor program.
Q Okay.
A Then he predominantly used -- looks like he used the Transbus information for a low-floor bus from what I can tell.
Q So that's your list of all the experts that

you've relied upon in this case?
MS. DORMAN: Object to form.
A As I said, the experts is listed in there that -- in that listing that I relied on when I wrote the report.
Q (BY MR. DOMINGUEZ) And then after the report, what expert opinions did you rely on after you wrote the -- this report?
A There's another -- we can go through this and add this, but this was after the report.
MS. DORMAN: Do you want some more water?

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THE WITNESS: Yes, please.
A Do you want me to read these off?
MS. DORMAN: Yeah.
Q (BY MR. DOMINGUEZ) Are those expert reports? I'm looking for expert opinions. I'm looking for other expert opinions that you relied upon.
A Let's see. For that report --
Q Well -- well, that are forming the basis of your testimony.
A Okay. There's a Thomas F. Fugger --
Q Okay.
A -- that I reviewed. That says it's an expert report. These are expert from Aaron Jones. I assume that was an expert report. The rest of these do not look like they're expert reports.
Q Okay.
A They may have been, but I -- it doesn't look like it and doesn't say that.
Q Okay. Let's go back to your report.
Actually, let's -- let's talk a little bit before we go back to your report on things that you're not here to testify about.
A Yes?
Q Would you -- what?
A Yes?

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Q Would you agree that you were not an accident reconstructionist?
A Yes. I am not an accident -- I agree with you. I am not an accident reconstructionist.
Q Would you agree -- are -- are you a metalologist [sic]?
A No, I am not.
MS. DORMAN: A what?
MR. DOMINGUEZ: Metalologist.
A Metallurgist. I am not a metallurgist.
Q (BY MR. DOMINGUEZ) Metallurgist. Metallurgist.
A I am not a metallurgist. I rely on others in that category.
Q Are you a vehicle dynamics expert?
MS. DORMAN: Object to form.
A I would not call myself a vehicle dynamics

expert.
Q (BY MR. DOMINGUEZ) Do you have any training in vehicle dynamics?
A I've been involved with vehicle dynamics, but I would not call myself an expert.
Q And you previously testified you did not go out there to see any markings or anything like that?
A I did not go and see the markings on the road because that's -- typically a reconstructionist does
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that.
Q Okay. Let's go to -- let's go back -- back into your report. And this is going to be I guess the second to last full sentence on page 1. And can you read with me there? It says: Failure to properly maintain the driveshaft and the driveshaft attachments to the transmission caused the failure of the driveshaft attachment to the transmission of the subject vehicle and the failure of the driver to note an impending failure of the driveshaft attachment to the transmission and take appropriate action to cease operating the coach caused the failure of the driveshaft attachment while the vehicle was in operation.
A Yes.
Q So are you -- I'm trying to figure out what exactly your area of expertise to testify in this -- in this is. And so what I'm trying to figure out is you talk about maintenance.
A Yeah. According to Caliyas --
THE WITNESS: Caliyas?
MS. DORMAN: Cayias.
A -- Cayias, the driveshaft was not lubricated. And therefore, if the driveshaft U-joints are not lubricated, they will fail.
Q (BY MR. DOMINGUEZ) But did you in your own
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analysis and investigation in -- in -- in -- in this case review any maintenance records to come to that conclusion?
A I looked at the Americanos maintenance records that were supplied, but in the -- but also I relied heavily on Cayias.
Q So you reviewed all of the Americanos maintenance records that were supplied?
A There were -- there were some maintenance records supplied that I look-- reviewed, that I looked at.
(Exhibit 33 marked)
Q I'm going to show you some maintenance records that were I believe exchanged in this discovery process that were Bates stamped.
MS. DORMAN: Do you have the English versions?
MR. DOMINGUEZ: Those were supplied.

MS. DORMAN: I know, but do you have the English versions?
MR. DOMINGUEZ: I don't believe so. Those were what was supplied.
MS. DORMAN: I know, but later on in the case you-all produced several service tickets that are in English. So if he can read them, he -- he can testify,

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but just I prefer that you hand him something in his native tongue.
A I -- these -- what I saw. And then that's why I had somebody read to me over the phone what they are because I cannot read Spanish.
Q (BY MR. DOMINGUEZ) And did you take any notes from those conversations with your --
A No, I did not.
Q So you -- you had somebody read to you over the phone --
A I asked them to tell me what those words meant.
Q Who read to you over the phone?
A One of the Hispanic individuals that work for us. This was quite a while back when I -- we first got these.
Q Work for us? Work --
A Work for MCI.
Q So you had a Hispanic MCI employee --
A Read these and tell me what these were -- what these words were. And some of them are repetitive. So he told me what these words were. That's what I did because I can't read Spanish.
Q And you took no notes off that, those conversations?
A No.

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Q You relied on your memory?
A Yes.
Q Okay. So basically, your -- your opinions as far as maintenance goes --
MR. DOMINGUEZ: Well, let me scratch that.
Q (BY MR. DOMINGUEZ) What about the bus leads you to believe that it was improperly maintained?
A Because the driveshaft wasn't lubricated based on Cayias.
Q And that's lubrication and that's based on Cayias' --
A His -- his expert opinion that it was not lubricated.
Q So you're not here to testify about the maintenance of the driveshaft?
MS. DORMAN: Object to form.
A What I'm saying is if you don't lubricate the driveshaft U-joints, they will fail. And I'm not sure I understand your question.
Q (BY MR. DOMINGUEZ) But you said you were

relying upon somebody else's expert opinion and you said you had a -- had a translated phone -- or a phone call --
A Right.
Q -- with an MCI employee?
A Right.

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Q And you said -- and yet, in your report, you're -- you're opining about maintenance?
A That's right. He did not -- the driveshaft did not look like it was lubricated. That's correct. That is maintenance.
Q But that's not your opinion. That's Cayias' opinion.
A Cayias' said it was not lubricated. And in my opinion, if you don't lubricate the driveshaft, universal joints of the driveshaft, it'll fail.
Q So you're trying to offer your own opinion then on maintenance?
MS. DORMAN: Object to form.
A Well, this is my opinion. So my opinion is if you don't lubricate your driveshaft, it will fail.
Q (BY MR. DOMINGUEZ) And the next -- reading down that sentence further, you have impending failure. Now, let's see here. And the failure of the driver to note an impending failure.
A Right.
Q What are the signs of an impending failure?
A Vibration.
Q Vibration.
A Predominantly that's it. Vibration. It vibrates.

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Q Vibration is the -- the only sign of an impending failure?
A Well --
MS. DORMAN: Object to form.
A -- for the driver, that is what he can sense. For the -- for the mechanic, it's looseness in the driveshaft when he does an inspection. But for a driver, which is what I thought we were referring to here, all he can -- he -- since I doubt if he crawls underneath the bus and looks at the driveshaft, he has to go -- he senses vibration. The mechanic reviews it as far as looseness in the driveshaft. But that sentence refers to the driver.
Q (BY MR. DOMINGUEZ) And how do you know that -- that Ms. Irma Morado did not note an impending driveshaft failure?
A Because I didn't see it in the information that was supplied to me.
Q What do you mean you did not see it? Unpack that for me. You did not see it in what information that was supplied to you?
A The information that was supplied by Americanos,

I did not see that she wrote it up to do that. I saw inspection forms, but I didn't see the write-up sheet where she wrote it up.

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Q And so is vibration unique only to a driveshaft failure?

A No. There --

MS. DORMAN: Object to form.

A There can be other reasons for a vibration.

Q (BY MR. DOMINGUEZ) What are the other reasons for a vibration?

A Could be a loose engine mount. Could be -- there's a lot of -- there's mult-- multitudes of reasons for a vibration in the rear of the bus. Could be a loose engine mount, could be a loose compressor. It could be other items that are loose that are not vibrating. There's multitudes of things it could be though.

Q And what is unique about an impending driveshaft failure that is -- that is not unique to those other things, the engine mount and the compressor that you were talking about?

A Those are examples of -- of the things that could occur. Like I said, if the -- generally what they would do is just write -- dri-- write it up that there's vibration in the rear of the bus and ask the mechanic to check it out. That seems to be what the Americanos procedures that I saw relied heavily on in their inspection on the -- I believe it's M-7 write-up from the driver.

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MR. DOMINGUEZ: Objection, nonresponsive.

Q (BY MR. DOMINGUEZ) Let's go back to your report to page 6, paragraph D. It's right there in the middle. Paragraph D. So you have that first long sentence and then you have: Only with continued spinning and impacts which alter the position of the spinning driveshaft can the driveshaft reach an unlikely position where it might be able to escape the two guardian structures.

Do you see that?

A Uh-huh. Yes.

Q What's continued spinning? What do you mean by that?

A Continued rotating of the driveshaft.

MS. DORMAN: Bless you.

Q (BY MR. DOMINGUEZ) Well, how do you measure continued spinning?

A Excuse me?

Q What's -- what's your rubric for -- for determining what continued spinning is? Is it -- I'm trying to -- I'm trying to grasp that -- that phrase, continued spinning.

A It's the rotation of --

MS. DORMAN: Object to form.

A It's the rotation of the driveshaft spinning.

Q (BY MR. DOMINGUEZ) Is it --

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A The rotation of the driveshaft continues to rotate.

Q Is it one rotation? Is it two rotations?

A No. It's mult--

MS. DORMAN: Object to form.

A It's multiple rotations that it would continue to rotate.

Q (BY MR. DOMINGUEZ) Okay. Going down to paragraph F, you talk about: On the subject coach, there was evidence of an impact at the top of the latch arm assembly, which would be consistent with the driveshaft reaching the top of the latch arm assembly at some point during the entire sequence of this accident, most probably very near the end of the accident when the coach was on its side.

A Yes.

Q Do you see that?

A Yes.

Q How do you know that most pro-- how do you know the most probably?

A Because that was based under our inspection we did in Los Alamitos that -- that the tag axle when it came loose from both ends, that was most likely method of getting out -- out of the -- out of the vehicle.

Q This is the -- the manual manipulation --

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A Yes.

Q -- the moving up and down?

A Yes. That is what that is.

Q And where did you -- how did you come out to figure out how to move that tag -- that driveshaft up and down?

A Excuse me? Could you re--

Q Would you consider that a test?

A No. We were doing an inspection and we were doing -- it could -- you can, I guess, call that a test. It's just an evaluation of -- of a -- of how the driveshaft could have came out of that enclosure. I'm not sure I would call it a test. It's just an evaluation.

Q Well, how did you know to do that evaluation?

A We were looking at: How did the driveshaft get out of the vehicle? When could have that occurred? That was one part of the evaluation.

Q Well, but did you learn how to do that from -- from a trade journal?

MS. DORMAN: Object to form.

MR. DOMINGUEZ: Can I get your objection?

MS. DORMAN: It's vague.

A From a trade journal, no.

Q (BY MR. DOMINGUEZ) Were there any scholarly

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publications that would have taught you how to do that?
A To hold a driveshaft and see how it came out of the vehicle?
Q Yes.
A No.
Q What would you -- what would you peg the rate of error in holding that drive-- in -- in that manipulation or whatever you want to call it? What's the rate of error of that?
A Rate of error? I have no idea.
Q If you got it wrong, if you in holding that driveshaft and coming to your conclusion that I think you came to that it couldn't come out, how do you know that you're wrong in that?
MS. DORMAN: Object to form.
A How do I know if -- if -- if you -- if you take the -- the opponent and you manipulate it and try to see what -- how it could've possibly came out of that, I don't know how that relates to the rate of error.
Q (BY MR. DOMINGUEZ) And -- and was this videotaped, this -- this manipulation that you did?
A No. It was just pictures. And we were looking -- we were trying to see if there's -- how -- what was the method it could come out of the vehicle.
Q And so if somebody wanted to recreate that,

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there -- there are notes that would've allowed somebody to recreate that manipulation. Are there?
MS. DORMAN: Object to form.
A I did not take any notes to recreate that. We would just do it again.
Q (BY MR. DOMINGUEZ) Was there a protocol that was -- that was written up for that?
MS. DORMAN: Object to form.
A Not that I recall.
Q (BY MR. DOMINGUEZ) Were there measurements that were taken as you were manipulating that driveshaft?
A There were some measurements taken, yes.
Q What measurements were taken?
A I don't recall. I'd have to go on that C-- DVD again and --
Q And do you have your notes here on those -- those measurements?
A No, I do not have the notes on the measurements. I did not take any notes, as I stated previously.
Q How were the measurements recorded?
A The measurements were on that DVD on the photos that we took.
Q So when you're saying measurements on this DVD, is it a measuring stick or a -- is it a measuring stick that --

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A Tape measure.
Q -- you took pictures of?

A Tape measure.
Q Tape measure.
And it would show the exact position of where you are and how you manipulated this driveshaft?
A It would show the pictures we took when we used the tape measure to measure.
Q I'm going to go -- go back to your opinions on maintenance. Well, wait.
So would you say that that -- that manipulation out in California was the only testing that you've done on this case?
MS. DORMAN: Object to form.
A No. The testing was done by the other experts like Granat.
Q (BY MR. DOMINGUEZ) You were just there then?
MS. DORMAN: Object to form.
A Excuse me?
Q (BY MR. DOMINGUEZ) You're saying the -- you said the testing was done by somebody else.
A I said -- you asked is that the only testing. I said some other -- other testing that was done was done by Granat as an example of -- of the experts, the other experts that did testing.

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Q But I want to know what testing you've done.
A Personally done, that is the only stuff we did, other than when we were out at the end of June. We were doing the -- the Americanos bus. We were looking into the protocol that we went out there on. That was the inspection at the end of June.
Q I'm sorry. Can you -- can you repeat that?
A At the end of June, we did some -- the protocol. It's in this report that discusses when we were looking into the signals from the transmission, the air system and some of the electrical system. Not all of the air system, not all of the electrical system. Just related to the tag axle.
Q And what was the result of that test -- of -- of that inspection?
A I certainly can read it for you. It's all in this report.
Q Well, no. I -- I don't want anything --
Is there anything more outside of this report in that inspection?
A No. I tried to include everything from that inspection in this report.
MS. DORMAN: You doing okay? You need a break?
THE WITNESS: As soon as he's done, I'd

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like a break. I don't know if --
MS. DORMAN: Okay.
THE WITNESS: When he's done.
MR. DOMINGUEZ: Okay.

Q (BY MR. DOMINGUEZ) I've just got a few more questions going back to your CV.
So what type of work -- you -- you said earlier that you were not involved in the tag axle design?
A That's correct.
Q What other work have you been involved in with regards to the driveshaft on this bus?
MS. DORMAN: Object to form.
A What do you mean by that? What do you mean by driveshaft on this bus?
Q (BY MR. DOMINGUEZ) Let me go back a little bit.
Well, in number 8, you talk about information obtained from my own experience and experience of others in operating and testing for the performance of the 102DL3.
A Yes.
Q What is that your -- when you say my own experience -- I'm -- I'm not asking about the experience of others. We've -- we've covered that I think, right?
A Right.

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Q So I'm asking about your own experience of the 102DL3. Now, this sounds like experience in the coach in general. Is that correct or is that incorrect?
A No. I have experience with that coach in general.
Q And so what I'm asking you is information obtained from your own experience on 102DL3, what other -- what is that information? What is that information and what is that experience? Two questions.
Let's start with the information.
MS. DORMAN: Object to form.
Q (BY MR. DOMINGUEZ) What is the information that you have on the 102DL3 that is relevant to this case?
MS. DORMAN: Object to form.
A Well, the 102DL3 I've been -- I was over the engineering group that was over the design element of the 102DL3 as it evolved in -- into what it is today. And today we have evolved it into where we've changed the tag axle to a higher rating. But all -- all the -- we've had numerous drivetrain changes since that time. We've had improvements we've made to various areas of the vehicle since that time. We've had structural changes to the vehicle at that time, the improvements in certain areas that appropriate. There's a multitude of changes that we worked on in that bus to improve it as time went on.

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Q (BY MR. DOMINGUEZ) You said you're over the engineering?
A Yes.
Q What --
A During the 2002, as shown in what you refer to as the CV, I was over engineering until 2009, I believe.

I'd have to look at the -- at the CV again. But I believe that's the time frame.
Q And what do you mean by over?
A Engineering reported to me.
Q And what exactly did they report to you that you used -- that you're using now as a purported expert in this case? What exactly did you gain from that?
A I go over the -- as I said before, I go over the -- the designs that are being done on the vehicles. I went over the assemblies of the designs, the -- the testing that was done at that time on whatever systems we're working on at that time. That's what I did. I was over that, so I reviewed those. And --
Q Were non-engineers involved in the review of those designs?
A Were --
MS. DORMAN: Object to form.
A Excuse me?
Q (BY MR. DOMINGUEZ) Were non-engineers involved

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in the review of those designs?
A What do you mean by non-engineer?
Q A person who does not hold a Bachelor's of Science in engineering.
A Well, we have technicians that are -- that we go through. We have draftsmen that are drawing up some of the parts. Those are non-engineers, I guess, in your definition.
Q And they would review those designs as well?
A They were doing the design work. We have designers and we have modelers that do some of the design work. And we give them direction on how we want things done as well as we receive their input.
Q Wait, wait. So let me try -- I understand this. You had people who did not possess an engineering degree do design work?
MS. DORMAN: Object to form.
A People who work on the CAD systems not necessarily have engineering degrees. Some do, some don't. Some are engin-- what they call engineering technologists. They do modeling, surface modeling, CAD drawings, drawing work. But the engineer has to approve it.
Q (BY MR. DOMINGUEZ) But -- but what I'm trying to get at is what did you learn from that time that you

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are applying to this case?
A You always --
MS. DORMAN: Object to form.
A You always learn things in engineering as time goes on. It's the common practice. You're always learning. And I'm not sure I understand what you mean by applies to this case. You're always learning things when you're doing things in engineering.

Q (BY MR. DOMINGUEZ) Well, did you learn how to manually manipulate a driveshaft to see whether a -- as -- as you did during the test in California? Did you learn that during your time as -- in -- in overseeing the engineering department?
A Well, all --
MS. DORMAN: Object to form.
A All the driveshaft -- all we did is we looked at to see how it would be able to come out of the vehicle. I don't know what that has -- that's not really just totally an engineering function. That's just an evaluation of how that could have possibly came out of there. I don't know if that has anything to do with running engineering.
Q (BY MR. DOMINGUEZ) Well, let's go -- let's go to your experience.
A Yes.

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Q In what experience did you learn being with this company for all these years on the -- this -- the subject bus model that you are bringing to bear on this case?
A As I said, we -- we do the -- we design the air systems, the electrical systems on the vehicle that I'm responsible for and that I was responsible for. And that's part of the -- the inspection we did. And then we also look -- look at when the engine changes, we go do the evaluation of the driveline, which includes the driveshaft.
I'm not sure I understand even remotely your question.
MR. DOMINGUEZ: That's going to be objection, nonresponsive.
Q (BY MR. DOMINGUEZ) So it sounds to me like you studied designs. Are you over -- you overviewed designs during your time at MCI and that's what gives you the experience -- and that's what you're saying is the experience that you're using to testify here?
A I've --
MS. DORMAN: Object to form.
A -- designed parts on buses. I've designed complete buses. I've done air system work. I've done design of air systems in the buses. Yes, that is my experience with MCI.

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Q (BY MR. DOMINGUEZ) And so as to your -- as to your opinions on causation as far as on the accident, you -- we're going back to that first par-- that first page, that failure to properly maintain, that sentence. Do you see that?
A Failure to properly maintain, yes.
Q Okay. Now, you were -- you used the word "caused" in there, caused the failure. But your testimony as far as -- is your testimony as far as causation -- you've already testified that you're not an

accident reconstructionist, right?
A Yes.
Q So your testimony as far as causation goes is not as to --
MR. DOMINGUEZ: Well, scratch that.
Q (BY MR. DOMINGUEZ) Let me go through my notes one last time.
Where's your principal place -- where -- where -- where are you stationed at?
A Stationed out of Chicago today.
Q And that's -- that's your -- that's your principal place of business where you go to 8:00 to 5:00 every day?
A No, I do not.
MS. DORMAN: Object to form.

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A Up to 2002 to approximately 2009, I worked out of Winnipeg.
Q (BY MR. DOMINGUEZ) Okay. So 2002 to 2009 --
A I was based out of Winnipeg and I worked -- I lived in Canada for an extensive period of time. And today I'm based out of Chicago.
Q And is that where you reside?
A No, I do not.
Q And where do you reside?
A Roswell, New Mexico.
Q And does MCI have a facility there?
A No, they do not.
Q Well, what has you in Roswell, New Mexico?
A My wife.
Q Oh. So there are no MCI employees there?
MS. DORMAN: Object to form.
A No. There's none except for myself. That happened to be where I lived.
Q (BY MR. DOMINGUEZ) Well, let's go back to your causation opinions. It's your testimony that the driveshaft cannot contact the tag axle rod. Is that -- is that your opinion?
MS. DORMAN: Object to form.
A Tag axle tie rod.
Q (BY MR. DOMINGUEZ) Tie rod.

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A I have not seen where it can contact the tag axle tie rod.
Q Let's go -- let's go back to your training a little bit. You said you had a training with FEA?
A Yes.
Q Have you had any other training after that?
MS. DORMAN: Object to form.
A Well, there's been various courses that were brought in for training. I don't recall them all. But I remember the FEA because that was new at the time.
Q (BY MR. DOMINGUEZ) So what would you say is -- what's the percentage of hands-on calculations that you

do?
A Hands-on calculations --
MS. DORMAN: Object to form.
A -- that I do?
Q (BY MR. DOMINGUEZ) Right.
A That varies depending on what we're working on. I may do some, I may do quite a few and I may not do any for a while depending on the project.
Q And analysis on systems failure -- on system failures?
A That would be --
MS. DORMAN: Object to form.
A That would be more -- more people involved in

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that than just one because usually you have -- you have peo-- other people look at that.
Q (BY MR. DOMINGUEZ) But are you part of a group that does that?
A I would be in part of that review, yes.
Q But are you the -- the principal person that studies that?
A No, I'm not.
MS. DORMAN: Object to form.
A I can be -- that's assigned to other people.
Q (BY MR. DOMINGUEZ) Wait. So it's assigned to other people?
A Yes.
Q Who?
MS. DORMAN: Object to form.
A Depends. It's assigned to various engineers depending on what the system is.
Q (BY MR. DOMINGUEZ) What about the system that you're opining on -- that you're purporting to opine on, the driveshaft and the tag axle and the latch system?
MS. DORMAN: Object --
Q Who would that be?
MS. DORMAN: Object to form.
A That has not been -- as I stated previously, we have not assigned -- assigned anybody to analyze that.

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We've been just reviewing what we've seen to date. Whether that was done back in 1992, I do not know.
Q (BY MR. DOMINGUEZ) But previously were you the principal -- you were -- were you the principal engi-- a principal engineer in studying a system failure of the systems that were involved in -- that you're purporting to opine on?
MS. DORMAN: Object to form.
A As I said, when this was originally designed in 1992, I was not part of that. There may have been at that time. I do not know. Nor have I found any records of that.
Q (BY MR. DOMINGUEZ) Would you agree with me that it sounds like your manual manipulation was pretty

subjective?
MS. DORMAN: Object to form.
A I don't agree with you, no.
Q (BY MR. DOMINGUEZ) Can you list the objective elements of your manual manipulation?
A Well, you have a driveshaft in a -- in a -- in a opening and you're trying to see under what condition what it would strike and where it would hit. I'm not sure -- it's a very simple manipulation.
Q So can you point to any scientific theory or theorem or formula that you used to -- to come up with

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that -- that manipulation?
MS. DORMAN: Object to form.
A No. I'm sure there's not a theorem on moving a driveshaft or anything in an opening to see what it strikes.
MR. DOMINGUEZ: Thank you very much, Mr. Hoogestraat.
THE WITNESS: I go to take a break.
MR. VIDAURRI: How much time do I have?
THE VIDEOGRAPHER: We're off the record at 3:54.
(Off the record from 3:54 to 4:05 p.m.)
THE VIDEOGRAPHER: We're on the record. The time is 4:05 p.m.

EXAMINATION

BY MR. VIDAURRI:
Q Sir, my name is Steven Vidaurri and I'm here to ask some questions on behalf of Irma Morado. Do you understand that?
A Yes.
Q Okay. I've got a last name that's difficult to pronounce. I've kind of gotten immune to people pronouncing it wrong. How do -- how should I say your last name?
A Hoogestraat.

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Q Okay. All right. I'm -- I'm still going to mess that up. Sorry.
A That's okay.
Q But I've got two pieces of good news and one piece of bad news for you. First good news is I don't have much time left. Second good piece of information is these other two lawyers have asked almost all the questions I was going to ask, so that's done.
The bad piece of news is because they've asked all these questions, I'm going to jumping around a whole bunch. So just bear with me. Okay?
A Okay.
(Exhibit 34 marked)
Q All right. I first want to hand you what has been marked as Deposition Exhibit Number 34. That's the notice for your deposition.

A Yes.
Q Did you have a chance to go through the subpoena that's attached to that?
A Yes.
Q Okay. The items that have been brought to this deposition and are in a couple of stacks in front of you, is that a stack that you created or a stack that somebody else created on behalf of you?
MS. DORMAN: Object to form.

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A I brought -- I brought most of this stack to -- I mean, there's some new exhibits in this stack now --
Q (BY MR. VIDAURRI) Uh-huh.
A -- that I didn't bring.
Q All right. But as far as the stuff you brought, you picked it out?
A Yes.
Q Okay. Couple of questions about it. In -- in looking at the -- the subpoena, how many items are there?
A 22.
Q Did you go through all 22 of those items and read them carefully?
A Yes, I did.
Q All right. Do you feel that there are any documents that are responsive to that subpoena that for some reason or another have not been brought to this deposition?
MS. DORMAN: Object to form.
A No. I went through each item, and as far as I know, it's been brought to this deposition.
Q (BY MR. VIDAURRI) All right. Are you aware of any documents that may have existed at one time that may be responsive to the subpoena but no longer exist for one reason or another and have not been produced today?
MS. DORMAN: Object to form.

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A There may have been documents that existed at one time, but I don't know of any documents that -- that may have existed that not -- that would be responsive to this. I don't know of any.
Q (BY MR. VIDAURRI) All right. So to clarify that and to make sure I'm understanding what you're saying, you're telling me that you are unaware of any document responsive to any of those 22 items that one time existed, but doesn't exist, but was not brought here today?
A If --
MS. DORMAN: Object to form.
A If I knew it existed -- I don't know of any documents that -- that do not -- that I did not bring along today.
Q (BY MR. VIDAURRI) All right. Very good.
All right. Now, in looking at what you have produced, I will tell you that it has been my

experience -- and I'm not suggesting that everybody has to do it, but it's been my experience that when an expert reviews documents and goes through a whole lot of information, a lot of times they'll make handwritten notes on documents or will put a Post-it or will put some kind of -- of handwritten information on the document so that once they get through reviewing everything, they can

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go back and -- and -- and refine things and -- and think about things and how they want to reduce their opinions to writing.

I haven't seen anything with any handwriting on it. Was there anything that existed with your handwriting or any kind of electronically-stored notes with regards to your review of these documents that's not before us?

A No. They -- no. I mean, I did not do it that way.

Q Okay. You didn't make any handwritten notes?

A No, I did not.

Q You didn't have a Dictaphone where you electronically recorded any thoughts that you were having at the time or otherwise memorialize any thoughts that you had after reading any particular document?

A I did not do it that way.

Q All right. Did you do -- how did you do it then?

A I just reviewed the documents, all this information and went through it. This is mostly related to the bus, which I was already familiar with. Just refreshed myself. And those I just went through and looked at and then went through all the information I was supplied.

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Q All right. And I think you've already testified that all your opinions in this case are based upon the material that is in front of you?

A That's correct.

Q All right. Have you seen any videos of any testing done at the Bosch test track?

A Yes. And I think that's in this stack somewhere.

Q All right. And you watched them?

A I looked at the videos, yes.

Q In their totality?

A Yeah. From beginning to end.

Q All right. Do you have any comments or criticisms of anything that was shown or depicted in those videos?

A Well, I didn't under--

MS. DORMAN: Object to form.

A I did not understand why they decided to shift the tag axle 30 degrees to one side to see what happened and how it related to this incident, but that's the only

criticism I had.
Q (BY MR. VIDAURRI) All right. Anything else?
A Not really.
Q All right. I think I overheard you say today that some of Mr. Jones' calculations may have been wrong

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or that you didn't agree with the methodology that he utilized in coming up with those figures. Did I hear that right?
A Well, one of his calculations, he used the weight of -- full weight of the driveshaft. And I'm not sure what he was trying to depict with that calculation. If it was still attached to the differential, you would not use the full weight of the driveshaft.
Q And the correct value to place on that would have been what?
A Probably half the weight.
Q Okay. And you base that opinion on -- on what, sir?
A The fact that one end of the driveshaft is supported.
Q Anything else?
A No. That's --
Q Okay.
A -- the basic.
Q I've looked over Exhibit Number 30, which is your resume, and it has been called a CV today.
A Okay.
Q Is -- is -- do you believe that that's fairly up to date?
A I believe so. Yes.

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Q All right. I didn't see anything on here that you have ever been a professional bus driver. Am I correct in believing that you have never served in that capacity?
A That is correct.
Q Okay. Have you ever delivered a passenger from port A -- from point A to point B anyplace at any time?
A I never have.
Q Do you still believe after all your testimony here today that all of your relevant opinions in this case are contained within Deposition Exhibit Number 11, which is your report?
A Yes.
Q Have you come up with any new opinions as we've gone over things today?
A No, I have not.
Q Do you have any opinions you believe relevant to this litigation that are not included in this report?
A No, I do not.
Q All right. Have you ever served as an expert witness on behalf of any other company other than MCI?
A No, I have not.

Q Okay. Do you -- did you try to determine what the duties of someone serving as an expert witness are when you were asked to serve as an expert witness?

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A I tried to ask, yes, what that --
Q All right.
A -- meant.
Q Were you told or do you have any reason to believe that an expert should only provide opinions on -- on topics that they are qualified to give expert opinions on? Do you believe that's a good general rule?
A I believe that's a good general rule.
Q All right. This is one of those times where I'm kind of jumping around seeing what's been covered or not, so just bear with me.
All right. Would you get your report in front of you? And can I -- and I'm almost certain that we have the different versions of them, but I've made notes on mine, so I'm going to use mine.
A I don't -- I don't --
MS. DORMAN: Object to form.
A I don't think they're different versions. I think it's just different font, I think.
Q (BY MR. VIDAURRI) All right. I think that was your testimony. I think you're right and I thank you for correcting me. But while -- while you've mentioned that, let me ask you that.
Is -- is what is before you as Deposition Exhibit Number 11, is that the one and only version of

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that report that has ever existed?
A As far as I know. That's the only one I got.
Q Okay.
A That's the one I supplied.
Q Okay. When you say you got it, what do you mean you got it? Who did you get --
A I wrote --
Q -- it from?
A I wrote it.
Q Okay. Did you -- did you draft that all by yourself?
A Yes.
Q Never having served as an expert witness, retained expert witness, you didn't seek any guidance on what types of things you should include or -- or how you should word things?
A That's the best shot I got.
Q All right. Did you send any other version of that draft of that to somebody else to approve or to suggest that you include other things or that you haven't addressed enough things?
A Not that I'm aware of, that I recall.
Q Well, you would be aware of it since you authored it, correct?

A Yeah.
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Q All right.
A I -- I -- I -- like I said, I don't recall anything like that.
Q All right. Did you read it over the phone to anybody or otherwise communicate the contents of it before it was signed?
A I didn't read this over a phone to anybody.
Q All right. All right. And I -- and I just want to make sure I have all the basis for this. For now, I'm not going to be asking any opinions. I'm just going to ask for -- for what the basis of the opinions that you have here and make sure that I understand them completely.
In the middle of that first paragraph, you talk about MCI provided more than adequate warnings and instructions concerning the subject coach and the operation of all aspects of the steerable ta-- tag axle.
What instructions do you include in that statement?
A What's in the maintenance manual, what's in the parts manual, what's in the operator's manual, the indication on the -- in the driver's area and the fact it went along with the indication on the driver's area. There's a buzzer to alert the driver to look at the dis-- the indicator panel on what may be wrong.
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Q All right. Right now I'm only asking what documents --
A Oh.
Q -- that you're providing, not what you think they mean to anybody.
A Oh, I'm sorry.
Q Are there any of it -- other than the -- I think the three you listed are the --
A These are --
Q They're the various manuals.
A These are the operator's manuals as well as the maintenance manuals, which I have brought sections of.
Q All right. You have not brought them in their entirety?
A No, I did not.
Q All right.
A Except for the operator's manual is in its entirety.
Q And I haven't looked at that, but are you comfortable that that is the version that would have accompanied the bus?
A As far as I know, that accompanied the bus.
Q All right. So I know that this was a 1995 model --
A And back in those days, the -- the
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information -- the operator's, maintenance went to Greyhound Lines and they distributed it to their subsidiaries or whatever they refer to it. So we're -- I'm assuming that that step occurred, we sent it to Greyhound Lines and that they sent it on to in this case Americanos.

Q All right. And I'm glad you told me you assume that and I want you to do that in the future. If you're ever testifying about something that you do not know as a fact and you're guessing or speculating or assuming, let me know that. Would you, please?

A Yes.

Q All right. Who was this bus first or initially sold to?

A It's in the final vehicle record, which --

Q Do you know off the top of your head?

A I think it's American Bus Sales, I think. But I'm not positive of that.

Q And they would have then sold it to who? Or do you know? If you don't know, that's fine.

A I don't know.

Q All right.

A All I -- I don't know if they sold it and then again it got sold. I don't know.

Q Would there have been any documents that you

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rely on in formulating this opinion that all the adequate warnings and instructions concerning the subject coach would have been passed along to Americanos --

MS. DORMAN: Object to form.

Q -- from whoever your company originally sold that coach to?

MS. DORMAN: Object to form.

Q (BY MR. VIDAURRI) Or do you know?

A I do not know if whoever originally purchased this bus if they sent -- gave that information to Americanos. I wouldn't -- there would be no way I would know that.

Q But MCI never communicated any separate documents to Americanos or to Greyhound for that matter with regard to this coach --

MS. DORMAN: Object to --

Q -- as far as you know?

MS. DORMAN: Object to form.

A I don't -- they may have. I don't know.

Q (BY MR. VIDAURRI) You don't know one way or the other?

A No.

Q Okay. And if you don't know the answer to one of my questions, just let me know you don't know and --

A Okay.

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Q -- if I ask you to speculate, I will, but I generally don't want you to speculate.

All right. You go on in one of the next sentences to say MCI complied with the applicable federal safety regulations in the design.

What applicable statutes are you talking about?

A Federal -- FMVSS standards.

Q Anything else?

A No. Those are the federal safety regulations --

Q All right.

A -- FMVSS standards.

Q All right. Down further a couple of sentences: The accident did not occur because of any condition of the tag axle assembly or features.

Again, you -- you have acknowledged that you're not an accident reconstructionist?

A That's correct.

Q You did not go to the scene?

A That's correct.

Q And you did not take measurements or -- and you do not know the particulars of -- of any -- any physical evidence at the scene of the accident?

A That's correct.

Q Okay. All you base that on is what you have

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stated in your report that you've based it on and the information that is before you as we sit here today?

A That's correct.

Q All right. And, again, the basis for that opinion, basically as -- as I have heard it today, is you did a hand manipulation of the driveshaft. And with that, you understand that physically the driveshaft could not have gone beyond the confines of the structures around it?

A That and going by the drawings.

Q Okay. And, again, you talked about the drawings. You looked at some -- you pulled some drawings from your own company?

A Yes.

Q All right. When you went to actually see either the -- the Americanos bus or the exemplar bus that you saw in California, did you take any independent measurements to try to verify those against what the values were in the drawings that you relied on from MCI?

MS. DORMAN: Object to form.

A No. What we did is we looked at the driveshaft length and -- and adjusted for that because it was different transmission.

Q (BY MR. VIDAURRI) Okay. So you --

A And the -- and its amount of insertion into

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the -- into the driveshaft support and adjusted for that amount. And it looked about the same intrusion of the driveshaft into that -- it was extremely close within the manufacturing columns.

MR. VIDAURRI: I'll object to that as nonresponsive.
Q (BY MR. VIDAURRI) My question to you was: Did you take any independent measurements to try to verify the measurements against what they should have been in the MCI drawings?
A No, I did not.
Q Okay. Down further, you say the failure -- you acknowledge or you state your opinion of the failure of the driveshaft to be improper maintenance. And I think what you said on that was improper lu-- lubrication; is that correct? Did I restate it properly?
A Improper lubrication because of Ca-- Cayias indicated as well as part of their maintenance activities, they always checked the drive-- driveshaft for movement.
Q Okay. So what -- what you're relying on for that opinion is the observation of one man how long a time period after the accident?
MS. DORMAN: Object to form.
A I don't understand the question. I'm sorry.

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Q (BY MR. VIDAURRI) Mr. Cayias, or whatever his name is, how long after the accident would he have made his observations?
A Oh, that was at least six months I would guess.
Q All right.
A That's my guess.
Q So in order for you to give this jury an opinion as to insufficient lubrication, you're basing that opinion solely on the -- on the observations that one man made six months after the accident; is that correct?
MS. DORMAN: Object to --
A That's correct.
MS. DORMAN: -- form.
Q (BY MR. VIDAURRI) All right.
A Approximately six months.
Q Do you have any other reason to believe that there was any other maintenance failure with regard to the driveshaft that you haven't testified to yet?
A Other than the looseness in the driveshaft that they do and their inspections should have picked up that it was getting loose.
Q Okay. And what do you base that opinion on?
A The fact that they in their maintenance documents or their inspection documents, it referenced them checking the driveshaft for play.

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Q Okay. And when you say that -- that you were told that the maintenance document shows that the driveshaft was inspected for play, do you take that to mean looseness?
A I take that to be looseness as well as in our maintenance manual we tell them to inspect the

driveshaft --
Q And --
A -- for looseness.
Q -- can you place any values on the degree of looseness or how loose it was? I don't know what engineering terms they would be for that type of --
A Are you talking about how much slack is in -- in the bearings? We don't have a standard for that.
Q Okay. So you're -- what you're saying is that -- that -- and first of all, the opinion that it was loose is not in your report, is it?
A No.
Q Okay.
A No.
Q So you've got a new opinion that it was loose, but there's -- there's no standards and you really have nothing to base it on other than they were checking it?
MS. DORMAN: Object to form.
Q (BY MR. VIDAURRI) Is that -- have I understood

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that correctly?
MS. DORMAN: Object --
A My --
MS. DORMAN: -- to form.
A Could you restate that question, please?
Q (BY MR. VIDAURRI) Yeah. I'll be happy to do that.
Your opinion that you've -- that I've heard for the first time just now that the driveshaft was loose is based on your review of a maintenance record suggesting that they looked at it or they examined it, and you further testified that there are no real standards or -- or measurements that -- that -- guidance for -- for its fit, right?
MS. DORMAN: Object to form.
A There is no standard for looseness. And if that's -- I did not state that in the opinion because there is no standards for looseness. It's a feel.
Q (BY MR. VIDAURRI) All right. So you don't know what it was -- as the bus left the station for this trip when it crashed, you don't have opinions with regards to how loose or how tight it was?
A It's impossible for me to know that.
Q All right. Thank you, sir.
Do you have any other opinions that are not

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stated in the report with regards to any failures on the part of Americanos or the bus driver or anybody else as applies to the assemblies that you claim failed?
A No. What I have is in the report.
Q All right. All right. Do you feel -- as a person who has never carried a paying customer from point A to point B and never been a professional bus driver, how is it that you feel qualified to render opinions with

regards to the actions or inactions of Irma Morado?
A What I stated in the report is what I found in inspections and found in documents that I reviewed. I'm not sure I understand your question.
Q My question to you, and I think you agreed with me before, that in order for an expert to express opinions, that expert should be qualified in the area in which he's expressing opinions. You still agree with that, don't you?
A Yes.
Q You've never been a bus driver?
A No, I have not.
Q Then how is it that you feel comfortable expressing opinions with regards to the standards of what a bus driver should or should not have done?
MS. DORMAN: Object to form.
A If you're referring to the not reporting the

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vibration, which I think is what you're referring to, I have been bu-- been in buses where the driveshaft has been misorientated and thus induced vibration. And what I said is if there was vibration in the driveline, I would hope that they would report it.
MR. VIDAURRI: Okay. I'll object to that as nonresponsive.
Q (BY MR. VIDAURRI) You've never been a bus driver?
A That's correct.
Q Do you know what the qualifications to be a bus driver are for various companies?
A I'm sure it varies by company.
Q You don't think there's a nationwide standard of what a bus driver should --
A There's a DOT requirement for the bus driver, but I -- I presume that different bus companies have different trainings --
Q Uh-huh.
A -- for their bus drivers.
Q But you --
A I presume. I have not been involved in that.
MR. VIDAURRI: All right. We'll object to that as nonresponsive.
MS. DORMAN: Object to --

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Q (BY MR. VIDAURRI) Are you a licensed engineer?
A No, I am not.
Q Okay. You've got an engineering degree, but you are not a licensed engineer?
A That's correct.
Q All right. You don't expect a bus driver to be an engineer, licensed or unlicensed, do you?
MS. DORMAN: Object to form.
A Can be, but I don't expect them to be.
Q (BY MR. VIDAURRI) When -- when MCI designs a

bus, they don't design it to the standard that they expect the driver to be an engineer and to be able to deduce or come up with logical diagnoses about what the bus is doing or not doing based on various factors?

MS. DORMAN: Object to form.

A We don't design the bus expecting an engineer to drive it.

Q (BY MR. VIDAURRI) All right. And in the next several questions I'm going to ask you, if you don't know the answer to my question, I -- I would really appreciate you just telling me that you don't know.

How long had the bus suffered symptoms of vibration before it left the highway?

A I don't know.

Q Did you read the deposition of Irma Morado?

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A I believe I did. Yes.

Q Okay. Did she say how long it was that there was indications that something was wrong before she ran off the road?

A I recall it was shortly before the incident -- incident that she reported it.

Q Within a matter of seconds, minutes, hours or what do you -- what is your recollection?

A My recollection -- I don't know. I don't think it's hours, but I -- I think it was a shorter period of time than that, but I don't know the exact period of time.

Q Would you agree with me that she would be the best person to ask about that?

MS. DORMAN: Object to form.

A I certainly would ask her about that, yes.

Q (BY MR. VIDAURRI) All right. Now, I'm going to -- this is not asking you for a factual basis. I'm going to ask you an opinion question.

Do you have an opinion as to how long there had been vibration, palpable, feelable vibration, under the dri-- driver's seat before the bus went off the road?

A I don't know that.

Q You then criticize Driver Morado for failing to take appropriate actions to cease operating the coach

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caused by the failure of the driveshaft. And let me kind of back up. Other than lubrication, are there other reasons for a driveshaft to fail?

A Well, there's -- I mean, it just -- it's a mechanical, rotating component. It could just -- just fail from that.

Q The easy answer is -- is there's several reasons why a driveshaft can fail other than a lubrication issue?

A There's more than one reason.

Q All right. All right. Going back to where I was. You fault her for failing to take appropriate actions to cease operating the coach caused by the

failure of the driveshaft attachment.
How long was it -- what's the time difference between the failure of the driveshaft and the bus leaving the roadway?
A My understanding from what I read was that there was a vibration or a noise in the rear of the bus, that there was an individual walked toward the back of the bus to investigate. And during that period of time, I would have hoped that the driver would have started pulling it over to the side of the road.
MR. VIDAURRI: I'll object to that as nonresponsive.
Q (BY MR. VIDAURRI) My simple question is: Do --

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do you know the time period between when the driver could have felt vibrations and the bus going off the road? Do you know that amount of time?
A The exact amount of time, no, I don't.
Q What do you fault her for not doing or for doing?
MS. DORMAN: Object to form.
A As I stated previously, I -- my -- what I stated was that when the vibration first occurred, there was apparently an adequate time for somebody to walk to the back of the bus to look. At that time when it first was felt, I was -- I say that she should have started pulling it over to the side of the road.
Q (BY MR. VIDAURRI) Okay. Would the feeling of vibration have been stronger in the front of the bus or the back of the bus or do you know?
A I would have expected it to be stronger in the back of the bus, but it...
Q Are there any instructions given by MCI to the driver of what to do if the vibrations are felt?
MS. DORMAN: Object to form.
A From MCI?
Q (BY MR. VIDAURRI) Yes, sir.
A Not that I'm aware of.
Q So if there's an opinion that she -- she failed

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to take adequate or appropriate actions and that MCI provided adequate instructions on what to do, there wouldn't have been any instructions to the driver about what to do if various types of vibration were felt?
A Not from --
MS. DORMAN: Object to form.
A -- MCI.
Q (BY MR. VIDAURRI) Okay. All right. On my top of page 2 of 7, there's an indication that you participated in several inspections of subject coach and reviewed the related engineering design. Again, are all those here today, all the documents you looked at?
A When I looked at them, yes.
Q All right. You say: I also inspected exemplar

coaches. And that's plural.
How many exemplar coaches is it that you inspected?
A Which page are you on? I'm sorry.
Q It's my -- well, let me just read the sentence: I also inspected exemplar coaches as part of my analysis of the claims made by Americanos against MCI.
So my question to you is: How many exemplar coaches did you look at?
A I've looked at coaches -- underneath the coaches over the years, many coaches over the years. And so I

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don't know how many buses I've been underneath and looked at -- at buses.
Q All right.
A In regard to -- in this thing, I'm sure I've looked at some at -- at the plant. I've looked at some at service centers. I've looked at many buses.
Q All right. I'm not asking you how -- in your experience in your decades of -- with MCI what you've looked at. My question is: In -- in order to prepare your opinions and to draft this report, it says that you looked at exemplar coaches.
A Yes.
Q All right. Are you now taking that back? Did you look at only one? In -- to -- to write your report and formulate your opinions, how many exemplar coaches did you inspect?
MS. DORMAN: Object to form.
A And as I said, over the period of the last months, I've been on various -- underneath various buses. I'm sure I don't know exact number, but it's more -- certainly more than one. It's probably less than 20.
Q (BY MR. VIDAURRI) All right. And, again, that's not for purposes of this litigation. That was just doing your job?
A Well, some of it --

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MS. DORMAN: Object to form.
A -- was in this litigation and some of it was my job.
Q (BY MR. VIDAURRI) How many exemplar buses did you inspect after you knew what the allegations were in this case?
MS. DORMAN: Object to form.
A I'm sure I looked at at least three or four.
Q (BY MR. VIDAURRI) Okay. And what -- do you have the model numbers? Do you have any notes about --
A No, sir.
Q -- the VIN numbers or the model numbers or what kind of engine they had or what kind of transmission they had that you looked at?
A No, I do not have any notes on that.
Q You also said that you reviewed videos of the

exemplar coach tested by Kevan Granat. Did you see -- I -- well, I think you already answered that.

MR. VIDAURRI: I'll withdraw it.

Q (BY MR. VIDAURRI) In the exemplar -- going back to the exemplar coaches for a minute, you said you didn't make notes. But do you have mental recollection of what they were?

MS. DORMAN: Object to form.

A What do you mean by mental recollection?

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Q (BY MR. VIDAURRI) Well, do -- you didn't make notes. Do you have it in your memory?

A Yeah. I was looking at the tag axle design --

Q Okay. But do -- do you --

A -- and then the -- and the locking system, yes.

Q Do you have memory as to whether or not these were the same model numbers as the Americanos bus and do you have recollection as to whether the transmission and the engines were the same as the Americanos bus?

MS. DORMAN: Object to form.

A The engine may have been the same. The transmission, I don't recall. There's one that was the same. There was -- most of the rest of them are a different transmission.

Q (BY MR. VIDAURRI) Okay. I have had many experts express to me in depositions that when you are trying to recreate a failure that you should try to replicate the conditions as best you can. Would you agree with that as a general statement?

MS. DORMAN: Object to form.

A As a general statement.

Q (BY MR. VIDAURRI) Okay. And when you did your own failure analysis about manipulating the driveshaft, the exemplar bus would not have been in motion, would it?

A No, it was not.

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Q At the time you did your manipulation, the driveshaft obviously would not have been turning?

A That's correct.

Q And, in fact, very little of -- of what happened on that highway on that date was replicated in your manual manipulation. Would you agree with that?

A No. I disagree.

MS. DORMAN: Object to form.

Q (BY MR. VIDAURRI) Okay. All right. You go on to state that it was apparent that the driveshaft had become disconnected at the transmission end first and rotated for some time.

Do you have an opinion with how many rotations there were between the time it disconnected and the time that the bus left the highway?

MS. DORMAN: Object to --

A No.

MS. DORMAN: -- form.

A I do not know.
Q (BY MR. VIDAURRI) Going down to the next paragraph, it -- it says that the driveshaft was covered in old grease and dirt. What is grease?
A Where are you at, sir?
Q It's in my paragraph 1 that's on the second -- page 2 of 7 in my report. It says the driveshaft was
0294
covered in old grease and dirt. Do you read that?
A Yes.
Q All right. Might another word for grease be lubrication?
A Well, grease and lubrication can be the same.
Q The dirt that -- that somebody else other than you saw -- and that is true. The description of -- of the grease being old and the -- and dirt, that's somebody else's opinion, not yours; is that correct?
MS. DORMAN: Object to form.
A No. When I looked at it, it looked like the grease was old.
Q (BY MR. VIDAURRI) All right. When did the -- let me ask you, what do you base that on?
A It looked old.
Q What does old grease look like?
A It was discolored. It was dark. It was not fluid anymore. It looked old.
Q And how long after the accident was this inspection? Was this a six-month one?
MS. DORMAN: Object to form.
A Well, this was in July 27th and the accident -- so it would have been close to six -- five, six months I would guess.
Q (BY MR. VIDAURRI) Can you give opinions to this
0295
jury about how grease ages under various weather and storage conditions?
A No. I will not give -- I would not give an opinion on that.
Q So the -- the word "old" really is meaningless in this context?
MS. DORMAN: Object to form.
Q Would you agree with that?
MS. DORMAN: Object to form.
A No, I would not. It looked old to me, so that's what I wrote.
Q (BY MR. VIDAURRI) All right. And dirt. Do you know when that dirt came to be on that grease?
A No. I would have no idea when the dirt came on the grease.
Q That would have a lot to do with the storage issues and the weather and the fact that it may have overturned in a grass median?
MS. DORMAN: Object to form.
A It could be a lot of reasons why there was dirt

on it.
Q (BY MR. VIDAURRI) Right. Could be a lot of reasons, right?
A That's what I -- yeah. There's a lot --
Q You -- you are not expressing an opinion to the
0296
ladies and gentlemen of this jury that before this bus left the roadway that there was dirt on the grease on that driveshaft?
MS. DORMAN: Object to form.
A No --
Q (BY MR. VIDAURRI) You're not --
A -- I'm not telling anybody that -- when I saw it there, there was -- looked like old grease in my opinion, and there was dirt on it. That's what I saw.
Q And that's all I'm trying to clarify, sir. I'm not -- if they read this and thought that you're saying that there was dirt on the driveshaft before it left the highway, you're not saying that at all, are you?
A I don't know that.
Q You didn't -- you didn't observe it?
A I didn't see it before it left the -- how would I know?
Q Exactly. That's -- I'm just trying to clarify that.
A I'm just writing what I saw at that inspection.
Q You indicate in another paragraph between -- as part of -- of category 1: The end caps show evidence of brinelling.
A Brinelling.
Q Did you determine the cause of the brinelling?
0297
A I did not determine the cause. I just showed evidence of brinelling.
Q All right. That was just an observation?
A That's an observation.
Q All right. All right. Go to paragraph 3 and look at the first couple of sentences of the paragraph.
A Yes.
Q Did you have the correct wiring as to be able to perform the test as per the protocol?
MS. DORMAN: Object to form.
A As -- as far as I'm concerned, yes.
Q (BY MR. VIDAURRI) You seem to -- to -- as far as you're concerned. Would somebody else have a reason to have a different opinion?
A They may have. In my opinion, I -- I had the correct wiring.
Q With regards to your statement pertaining to the DDEC data, any opinion as to why you could not get it or why it would not communicate?
A I have no opinion.
Q All right. Down on that -- at least it's down on the same page for me. I don't know what it is for

you. But it's on paragraph 4. You talk about the locking pin was extended. Do you see that? It's the last sentence on the paragraph that starts "If the tag

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axle electrical or air system are not operable." Do you see that paragraph?

A Yes.

Q All right. You talk -- at the end of that paragraph, you talk about the locking pin being extended.

A Yes.

Q How do you know it was extended?

A Because it's a spring-loaded pin to extend it. It's mechanically extended.

Q Okay. And how far was it extended?

A Through the lock pin -- plate --

Q Excuse me?

A Through the lock plates to lock it.

Q I'm sorry?

A There's two lock plates and there's a plate that goes between them and it extends through those two plates.

Q And it came through the two plates?

A Not when this -- when I saw this vehicle and its condition. I'm just saying that's where -- that's the way it's designed to do. It goes through there. This vehicle, the lock plate was outside of it and it was extended through it or didn't look like it was totally extended through it.

Q It was not extended or not extended totally --

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MS. DORMAN: Object --

Q -- is what you're saying?

MS. DORMAN: -- to form.

A If I recall correctly, it was extended to the -- through the second plate, but the plate that's between the -- the two was outside of it.

Q (BY MR. VIDAURRI) All right. Would you be able to give us a value as to the degree or amount of extension?

A What do you mean by -- what -- what is your -- I don't -- I don't understand your question.

Q You -- you're saying here the locking pin was extended. I'm just trying to figure out how much it was extended or -- or what that may look like in someone like me, layman terms?

A Well, it was extended -- the cylinder when we checked it later, it was fully extended, if that's what you mean. Or at least that's what it looked like.

Q All right. There's a statement in the -- in the next paragraph about significant modifications presumably by Americanos. Do you see that?

Well, let me just ask you this. You're saying that there were some modifications and you presume. My question to you is: Do you know who made

them?
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A No, I do not. That's why I said presumably. I have no idea.
Q And I just wanted to clarify that.
In the next paragraph, you talk about some of the plumbing within the coach and you talk about some plugging.
A Yes.
Q Do you see that?
A Yes.
Q Do you know when it is that these items came to be plugged?
A No.
Q You can't really say whether they were plugged before the accident, can you?
MS. DORMAN: Object to form.
Q (BY MR. VIDAURRI) All I understand that you can say is that when you found them on the date you looked at it, they were plugged?
MS. DORMAN: Object to form.
A For a fact, that's all I can state.
Q (BY MR. VIDAURRI) All right. Thank you.
Okay. Let me ask you to look at a couple of paragraphs or three paragraphs down here talking about the -- the telltale dash light system. Do you see that?
A Yes.
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Q Same que-- same type of question. You talked about the warning lights being burnt out. Do you know when it is that these light bulbs came to be inoperable?
A No, I do not.
Q Can you testify to the fact that they were inoperable before this coach ran off the road?
MS. DORMAN: Object to form.
A I don't know if they were or not.
Q (BY MR. VIDAURRI) All right. There were warning lights or check lights and there were also audible buzzing signs that were available on this coach; is that correct?
MS. DORMAN: Object to form.
A There was a buzzing for the -- for the two indicator lamps.
Q (BY MR. VIDAURRI) All right.
A A buzzer tied in with them.
Q Is that kind of a design redundancy?
MS. DORMAN: Object to form.
A Well, it's intended if you have a buzzer to -- to assist the driver to know to look at the indicator panel.
Q (BY MR. VIDAURRI) All right.
A I don't know what you mean by redundancy.
Q Well, kind of when I read it, my first
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impression was is there's two types of -- of signals to the driver about -- about an issue. One being a light and the other being a buzzer. And I kind of thought, well, that's kind of a -- I thought graciously that maybe that was a redundancy to make sure that the driver would -- would be made aware of a potential issue by two different ways so that if one was inoperable, the other would get their attention. Am I incorrect in that thinking?

MS. DORMAN: Object to form.

A It can be looked at that way. Your intention is to try to warn the driver.

Q (BY MR. VIDAURRI) All right. Do you have any evidence or any knowledge that would indicate to you that the buzzer sound would buzz significantly later in time than a warning light would come on?

MS. DORMAN: Object to form.

A Well, they should come on pretty close to the same time on this bus.

Q (BY MR. VIDAURRI) All right. So even if the warning light was not operable -- and I'm not saying that it was. But even if it was, there would have been a buzzer that would have alerted the driver at about the same time as the warning light?

MS. DORMAN: Object to form.

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A It should have. Except in this case where there was some problem with the contactor and that buzzer was not exac-- and I don't know when, but when we had it operated for a period of time, the -- the buzzer would fade out because this con-- this rely.

Q (BY MR. VIDAURRI) All right. And, again, for the purposes of the jury understanding this testimony, this is examinations that were done a good six months after the collision?

MS. DORMAN: Object to form.

A Approximately thereof, yes.

Q (BY MR. VIDAURRI) And this was a -- quite a bit of trauma to this bus. Wouldn't you agree with that?

MS. DORMAN: Object to form.

A It certainly rolled on its side, yes.

Q (BY MR. VIDAURRI) All right. And would you expect that to cause any damage to any of these systems?

MS. DORMAN: Object to form.

A Not --

Q (BY MR. VIDAURRI) You can't rule that out, can you?

A Not a hundred percent.

Q All right. The exemplar bus that was observed by you at Los Alamitos in California, would you happen to have the VIN number of that coach?

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A If I recall correctly, the same VIN number bus that was in Uvalde.

Q Would you happen to know that VIN number or have that reported anywhere?
A Well, it'd be in the Uvalde information and I don't have it off the top of my head.
Q All right. You talked a lot about looking at MCI engineering drawings to get materials. And forgive me if this was covered. And if it was, just tell me. But did you specify which drawings they were that you looked at and relied upon for the measurements?
A Well, those drawings were all in the information previously supplied to Greyhound, all those drawings. So I did not print out all those drawings again.
Q But what I'm trying to figure out is in the whole universe of these drawings, I'd like to know which ones it is that you looked at and which ones you relied on. Can you tell me which ones or you can't?
MS. DORMAN: Object to form.
A Well, it would be the tag axle drawings that are previously supplied to -- to them. So, no, I don't know the numbers off the top of my head. I didn't print those out again.
Q (BY MR. VIDAURRI) Were these supplied at one of your last depos?

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A Yeah. In the June depo.
Q Do you have any other opinions other than lubrication about im-- improper maintenance of the coach?
MS. DORMAN: Object to form.
A There may -- well, the air system, that looks questionable in my mind, but I -- when that looked like that was a maintenance issue.
Q (BY MR. VIDAURRI) The air system?
A When I went through the air system, some of this was not working.
Q All right. And, again, this was six months later and you're talking about the plumbing issues being plugged?
A Yes.
MS. DORMAN: Object to form.
Q (BY MR. VIDAURRI) And I think you testified that you didn't have any real knowledge about when it is that those became plugged; is that correct?
MS. DORMAN: Object to form.
A Yeah. I don't know when they became plugged.
Q (BY MR. VIDAURRI) Do you have any other criticisms of the maintenance of the coach?
MS. DORMAN: Object to form.
A The air cleaner inlet was disconnected where we draw the air for the air compressor. Again, I don't know

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when that occurred.
Q (BY MR. VIDAURRI) And, again, there were a lot of forces to this bus. Do you have any opinions that are reliable as to when that might have happened?

A I do not know when that -- exactly when that happened.
Q All right. And paragraph H, if you'll turn to that. There's a fairly general opinion about having evaluated the design, the manufacture and the adequacy of the warnings and instructions concerning the subject coach. I want to see if you can specify for me, if you can, what warnings it is that you're talking about in that sentence.
A The warnings that are in the maintenance manual and the operator's manual.
Q Any specific warnings that you can think of from those manuals that you want to give emphasis to to this jury as supporting your contention?
I'm not asking you to go back and look through it to -- to see what it is as far as your contention. Did you have any in mind as you wrote the report?
A Yes. That was the -- that it's in the -- it's in the -- in the operator's manual where we have the warning systems from the tag steering and tag lock and

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the buzzer that warns driver and there's information in the operator's manual. As well as there's in the maintenance manual it talks about looking at the thing periodic --
THE REPORTER: Looking at what?
A Looking at the tag axle system in -- in their preventative maintenance.
Q (BY MR. VIDAURRI) Now, also in your report you have the phrase in your criticisms of Irma, you say failure of the driver to note impending failure.
Other than the vibrations you have testified about that were stronger at the rear of the bus than in the driver's seat, are there any other things that you assert that she should have been aware of that should have told this non-engineer that there was impending failure?
MS. DORMAN: Object to form.
A No. That is my opinion. That -- that vibration.
Q (BY MR. VIDAURRI) And, again, there's many reasons for vibration?
A Yes.
Q Can you distinguish as a -- as a non-engineer about the cause of the vibration as you're driving this coach along the highway?

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A Possibly not. Just would know that there was vibration. Unusual vibration.
Q And, again, you can't tell this jury how long that there would have been palpable vi-- vibrations palpable in the driver's seat before this coach went off the roadway?

A I'm going -- I'm going by her information that she supplied. And, again, there's not exactly a detailed time line in that.

(Exhibit 37a marked)

Q I'm going to hand you what has been marked Exhibit 37a. Have you seen those before?

MS. DORMAN: These are from different experts. Do you want them all together?

MR. VIDAURRI: Yeah.

MS. DORMAN: Okay.

Q (BY MR. VIDAURRI) As you go through them, my question to you is going to be: Have you read those?

A I do not recall this, but I do recall this.

Q All right. The one that you do not recall is the one that's got the mark on it as 37a, Test Bus Modification Mechanical Report. Did I read that correctly?

A That's correct.

Q And the two --

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A I don't -- I don't recall this -- reading this one.

Q All right. And the two that you did review, do you remember anything jumping out at you being incorrect or -- or that somebody utilized faulty methods to come up with any information in those two documents?

MS. DORMAN: Object to form.

Q (BY MR. VIDAURRI) I don't need you to review them all. Just did something jump out at you?

MS. DORMAN: If you don't mind letting him review it so that he can answer your question.

A I remember something in regard to this Longoria, but I don't recall at this time what. I think it was in the steering wheel angle information he had. I was trying to understand exactly how he came up with that. But it refers to a -- I believe it's MCADS that he's -- excuse me. Something -- yeah. He used ADAMS. He's using ADAMS to do this as I --

Q (BY MR. VIDAURRI) Uh-huh.

A -- read this. And it was -- the information or what inputs he did in ADAMS, I didn't see -- see that in this report. So I was trying to figure out how he got from this conclusion based on that information.

Q All right.

A And -- but the information that he used as his

0310

basis for this, I didn't see that in here.

Q All right. Do you think you've understood my questions after you've asked for clarification?

MR. BULLION: Can you hold on just a second, whoever's asking questions? I think my -- my records show we've been going over six hours now. And I don't -- can the videographer tell us what the official record is?

MR. VIDAURRI: As long as this time period is not included within what we've got left.
MS. DORMAN: I think we've got 13 minutes.
MR. VIDAURRI: I think we've got about 13 too.
Q (BY MR. VIDAURRI) Do you think you've understood my questions?
A I've tried to.
Q All right. Then I'm going to thank you for your time and I'll pass you as a witness.
MR. BULLION: I didn't know that was about to happen or I would have -- I wouldn't have complained.
MR. VIDAURRI: Well, that's why I voiced up.
MR. BULLION: Can you -- can you hear me, Ms. Court Reporter?
MR. VIDAURRI: Yeah. We can hear you good.

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THE REPORTER: Can you scoot that down here?
MR. BULLION: Ms. Court Reporter?
MS. DORMAN: I don't think we can.

EXAMINATION

BY MR. BULLION:
Q Mr. Hoogestraat, I'm Tom Bullion and I'm going to ask you some follow-up questions. Can you hear me okay?
A Yes.
Q Okay. I'm sorry. I'm sure I screwed up your name, but hopefully you'll be glad to know I'm not going to yell at you. I'm not going to call you a criminal. I'm not going to use a bitchy tone with you. Okay?
A All right.
Q I'm just going to ask you a few questions to try to clarify some things. If you don't understand my questions or you can't hear me, let me know that. Okay?
A All right.
Q Have you ever had three lawyers from the same law firm take your deposition before today?
A No.
Q What -- what do you make of that? Why -- why does it take three of them to take your deposition today?
MR. VIDAURRI: Objection, form.

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A I don't know.
Q (BY MR. BULLION) Does -- did it appear to you they have vastly different specialties or something and each one of them focused in on a little bit different area?
A I did not get that impression.
Q Was it just plain old file churning? Do you think that's what it was?
A I don't know what it was.
Q Okay. Would it surprise you, sir, if the

U-joint components -- some of the U-joint components that were on this accident bus were over 15 years old at the time of the accident?
MS. RODRIGUEZ: Objection, form and leading.
A I don't know. I don't -- that would not surprise me.
Q (BY MR. BULLION) What -- what would that say if there were 15-year-old U-joint components on this bus at the time of the accident? What would that say to you about the operator of the bus?
MS. RODRIGUEZ: Objection, form.
A It would mean that -- in my opinion, it would mean that he has not maintained the U-joints.
Q (BY MR. BULLION) And did you -- did you have an

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opportunity -- it just happened last week, but did you have an opportunity to read any part of Mr. Jones' deposition?
A I -- last week?
MS. DORMAN: We didn't get it yet.
A I haven't --
Q (BY MR. BULLION) He was deposed -- he was deposed last Wednesday, I think.
A I did not read Mr. Jones' deposition.
Q Would it -- I'll -- I'll represent to you that he testified that if the U-joint components were indeed 15 years old at the time of the accident, they belonged in a museum. Do you agree with him on that?
A No, sir. I don't agree they belong in a museum.
Q Well, they shouldn't be -- the shouldn't be in use if they're 15 years old, should they?
MS. RODRIGUEZ: Objection, leading.
A I -- I -- certainly they shouldn't be in use, but all I -- all I'm obje-- disagreeing, I don't think it's appropriate to put them in a museum.
Q (BY MR. BULLION) Well, that may be a -- that may be a good point.
Are you aware, sir, that the -- the driveline that was on this particular bus that was involved in the accident was a Dana Spicer driveline when

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it left MCI's hands?
A Yes.
Q And have you seen the -- have you seen the Spicer parts that were recovered from the -- from the U-joints that are marked 0394?
A Yes.
Q And do you understand that to mean they were manufactured during the third week of 1994?
MS. RODRIGUEZ: Objection, form and leading.
A That's what I understand.
Q (BY MR. BULLION) What do you under-- in light

of the objection, which will be overruled I'm sure, but what do you make of the -- the markings on the Spicer parts that are -- that are 0394?
MS. RODRIGUEZ: Objection to sidebar.
A They're -- as far as I know, they were made in -- according to that indication, they were made in the third week of 1994, possibly the ones that came originally with the bus.
Q (BY MR. BULLION) And -- and this bus, as I understand it, was manufactured late during 1994, correct?
A Correct.
Q And if -- if there were parts that were on the

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driveline at the time of the accident that were manufactured during 1994, would that or would that not be consistent with them having been the original equipment parts of the driveline?
MS. RODRIGUEZ: Objection, leading.
A It would certainly seem to indicate that, yes.
Q (BY MR. BULLION) Have you read Sean Genereau's testimony in this case?
A Sean Genereau. No, I have not.
Q Mr. Genereau was the director of maintenance of -- of Americanos for a long period of time. Are you aware generally that that's the case?
A Yes.
MS. RODRIGUEZ: Objection, form.
A Yes, I do.
Q (BY MR. BULLION) To the extent that Mr. Genereau's testified that it was against Americanos policy to mix genuine and generic U-joint parts, do you agree or disagree with him on that?
A I agree with him.
Q Is it a good idea to mix genuine and generic U-joint parts on a bus like this one?
MS. RODRIGUEZ: Objection, leading.
A I -- no. MCI does not recommend doing that.
Q (BY MR. BULLION) And why is that?

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A We just don't feel that's appropriate to do, to mix -- mix suppliers' parts on U-joints.
Q Or to -- to the extent that Mr. Genereau also testified that it would be against Americanos policy if the -- if the original driveline parts were Dana Spicer to replace them with parts manufactured by anybody other than Dana Spicer. You see what I'm trying to suggest to you?
A Well, yeah. And that's -- that's our opinion that's what you should do.
Q Okay. To the extent that -- to the extent that Mr. Genereau said that it was Americanos policy to replace Dana Spicer parts with Dana Spicer parts, you would -- that would be consistent with MCI's

recommendation?
A That --
MS. RODRIGUEZ: Objection, leading.
A That's correct.
Q (BY MR. BULLION) Would that or would that not be consistent with MCI's recommendation?
MS. RODRIGUEZ: Objection, form.
A That would be consistent. I'm sorry. I wasn't -- I didn't -- I didn't speak up loud enough.
Q (BY MR. BULLION) No, it's okay. You answered the question. There was just a -- there was just a -- an

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objection to it, so I just wanted to make it clear.
Based on your experience, sir, can maintenance problems cause driveshaft failures?
A Yes.
Q And have you -- how long have -- how long have you been familiar with the fact that maintenance problems can and do cause driveshaft failures?
MS. RODRIGUEZ: Objection, form.
A I've worked on buses for over 25 years and I've seen issues where driveline failures have occurred.
Q (BY MR. BULLION) Okay. And your opinion, as I understand it in this case, is that that's what -- that's what happened. The reason this driveline failed is because of maintenance issues, right?
MS. RODRIGUEZ: Objection --
A That is --
MS. RODRIGUEZ: -- leading.
A -- my opinion.
MR. BULLION: All right. Those are all my questions. I appreciate it.
EXAMINATION
BY MS. DORMAN:
Q Mr. Hoogestraat, I have some quick follow-ups. Are you okay or you need a break?
A Yes. No, let's get it --

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Q Okay. There were some questions earlier about what warnings MCI provided to the operators of these coaches. If a coach is registered to an owner, would that owner also get service bulletins or -- or other bulletins notifying them of product improvements or other things like that?
A That's what we endeavor to do.
Q All right. So would you add service bulletins and product improvements and -- and other update materials to the list of things that could include warnings that would be sent from MCI to owners of vehicles?
MS. RODRIGUEZ: Objection, leading.
A They can include those on the -- on those bulletins, yes.
Q (BY MS. DORMAN) All right. Dr. Longoria, the

gentleman whose report you just were handed right here --
A Yes.
MS. DORMAN: It was part of something A.
27a?
MR. VIDAURRI: I think it was 37a.
MS. DORMAN: 37a. Thank you.
A Yes.
Q (BY MS. DORMAN) He -- in his report, he relied upon a 1972 bus study and an article written by some

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people who had some knowledge about the design of the E coach, correct?
A As I understand it, that's what he relied on.
Q Right.
And the E coach, is that a different model from the D coach?
A Yes.
Q How would you in a very brief summary describe the differences in those two coaches?
A Well, it's -- it's got a totally -- it's different -- it's got a different center of gravity. It's got a totally different suspension. It's got a different steering system. It's got a caster steer system on the tag axle versus a four-steer. It's a -- it's a diff-- totally different vehicle.
Q All right.
MS. DORMAN: Could I trouble you for some exhibit stickers? Now, how did we skip 35 and 36?
THE REPORTER: 37a was already marked, I guess.
MS. DORMAN: Oh, okay. So if I mark 35, it'll be okay?
THE REPORTER: Uh-huh.
Q (BY MS. DORMAN) I'm going to ask you this follow-up question, Mr. Hoogestraat. It's a favorite of

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Ms. Rodriguez.
If an expert's facts are -- are not reliable, would his opinions then be unreliable as well?
MS. RODRIGUEZ: Objection, leading.
Q (BY MS. DORMAN) If the facts that the expert relies upon are -- are not reliable, then would his conclusions be unreliable as well?
A Can be.
MS. RODRIGUEZ: Objection, leading.
(Exhibit 35 marked)
Q (BY MS. DORMAN) All right. I'm going to show you what I've marked as Exhibit 35. This is the article and I misquoted it. It was not from Bus Ride. It's from Bus & Motorcoach News dated October 15, 2010. I'm going to hand a copy to Ms. Rodriguez so she'll know what you're looking at.
Do you remember earlier in the deposition when Ms. Rodriguez called me unethical?

A Yes.
MS. RODRIGUEZ: Objection, form and leading.
Q (BY MS. DORMAN) She accused me of divulging information gained by MCI employees regarding the Nappanee ABC Bus Company refurbishing project, correct?
MS. RODRIGUEZ: Objection, form and
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leading.
A That's what I recall. Yes.
Q (BY MS. DORMAN) All right. I've highlighted a couple of areas there. I just want you to follow along with me and tell me if I read these -- these phrases correctly. And, again, this is from Industry News. Bus & Motorcoach News. The date is October 15, 2010 and this is on page 22 of the magazine.
Greyhound Lines contracted with ABC Companies earlier this year to refurbish the 250 MCI 102DL3 coaches. See June 1 Bus & Motorcoach News.
Did I read that paragraph correctly?
A Yes.
MS. RODRIGUEZ: Objection, form and leading.
Q (BY MS. DORMAN) The next one is: Most of the coaches being rehabbed -- rehabbed have more than a million miles on them, and Greyhound is investing in both improving passenger comfort and extending the useful life of the buses.
Did I read that correctly?
A Yes.
MS. RODRIGUEZ: Objection, leading.
Q (BY MS. DORMAN) In the middle para-- in the middle column rather, about halfway down, it says: The
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new refurb program includes installing factory rebuilt engines, transmissions, axles, bearings, brakes and A/C compressors. The new differentials and engine electronic control modules are set up to improve fuel mileage.
It goes on to talk about the interiors, the undercarriage being cleaned, stripped, rubber flooring installed, seats are refurbished with leatherette covering.
Do you know what leatherette covering is?
MS. RODRIGUEZ: Object to sidebar.
A I do not know what leatherette covering is.
Q (BY MS. DORMAN) All right. Do you know if they're installing seat belts in these coaches?
A I'm not aware of them doing that.
Q All right. Would you be surprised to learn that two people that do work for ABC Bus Company have testified in this case that Greyhound is not having seat belts installed in these refurbished coaches?
MS. RODRIGUEZ: Objection, leading.
A They may have. I -- as I said, I don't know

that they're installing them or not.
Q (BY MS. DORMAN) Would you be surprised if they don't install them?
A I would not be surprised if they did not install them.

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Q All right. If you look on the third column, I -- another paragraph I highlighted. It says: Currently the facility is completing one bus per day with a workforce of 120 and the program is expected to last 12 to 18 months. The total price tag for rehabbing the 250 coaches is believed to be between $30 million and $40 million.
Did I read that paragraph correctly?
MS. RODRIGUEZ: Objection, leading.
A Yes, you did.
Q (BY MS. DORMAN) This article cites a gentleman named Lee Loper, ABC vice president, and also a Mr. David Leach, Greyhound president and CEO; is that correct?
A That's what it says, yes.
Q All right. So if the -- if the work going on at the ABC plant were a big secret, you don't think that Mr. Leach, the Greyhound president and CEO, would be giving an interview for an article to be published in an industry -- industrywide publication, do you?
MS. RODRIGUEZ: Objection, leading.
A I wouldn't think so.
Q (BY MS. DORMAN) Do you think there's anything unethical about an attorney quoting information that's contained in a public -- publicly published article in a deposition?

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A Not -- I wouldn't think so.
Q You're familiar with Ms. Rodriguez, aren't you? You've dealt with her two other times when she's taken your deposition.
A Yes.
Q Was her tone significantly different today?
MS. RODRIGUEZ: Objection, form and leading.
A A little bit.
(Exhibit 36 marked)
Q (BY MS. DORMAN) I'm going to show you what I've marked as Exhibit 36. This is a photograph of the VIN plate as we call it.
A Yes.
Q Is that what they call it in the bus industry?
A Yes.
Q Is that from the subject coach that you've inspected?
MS. RODRIGUEZ: Objection, leading.
Q (BY MS. DORMAN) Let me rephrase the question. Where did that come from?
A It's a picture of the plate. It's VIN number

46918. I believe that's the correct number.
Q That's our subject coach? When was it manufactured, sir?

A November 1994. Or that's the date of manufacture on the VIN plate.
Q All right. This accident happened March 16th of 2010. Are you familiar with that accident date?
A Yes.
Q And the first inspection that you attended it looks like was on July 27, 2010. Is that correct as well?
MS. RODRIGUEZ: Objection, leading.
A Approximately that date, yes.
Q (BY MS. DORMAN) All right.
A It was that summer.
Q Will -- will you grab your report and have it handy because I need to go over a couple of things with you. Here it is. Exhibit 11 it looks like.
A All right.
Q If you look at -- it looks like page 2 where it says: The subject coach inspections and findings are listed below.
Number 1 is subject coach inspection on July 27, 2010.
A Yes.
Q Did -- did I read that correctly?
A Yes.
Q All right. So would that be the first time you saw the -- the subject vehicle?
A Yes.
Q And if my math is correct, that's about four months and 10 days after the accident. Is that fair to say?
A Yes.
Q All right. So we're not talking about six months or more following the accident that the parties were allowed to first look at this coach?
MS. RODRIGUEZ: Objection, form and leading.
Q (BY MS. DORMAN) Is that fair to say?
A Yes.
Q Were you allowed to -- to remove anything or even touch anything on the coach at that time?
A We were not allowed to remove anything.
Q Okay.
A I don't know about the term "touch."
Q Number 4 is your subject coach inspection on June 30 to July 1st. Can you describe for us generally what your goals were during that inspection?
A We had a protocol. First part of it is to look at the transmission, which was predominantly done by Greg Wright, to eval-- look at the transmission and see if

there was any issues with the transmission, which we did
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not find anything really totally unusual.
Q Okay. What was next?
A Then we started on the evaluation of the tag axle system, air control.
Q And what did that entail?
A That entailed -- initially we started with the -- looking at the electrical system.
Q Okay. What else?
A And as we got into the electrical system, it was mostly -- it was predominantly to check out and see if the electrical system on the coach functioned.
And as we got into that, then we realized that there was continuity on the electrical system. However, the tag locking system, there was no air to the tag lock. And then we went into the air system to see why the tag locking system was not working or the air to the tag locking system was not being supplied because we -- we were trying to actuate it at that time.
Q And just -- oh, sorry to interrupt you.
Generally could you describe for us how the tag lock system is operated?
A It's air-operated system.
Q Okay.
A The tag locking and the caster steering are both air-operated and relies on the air system on the bus
0328
to -- to function. These are air cylinders that are controlled electric pneumatic valves.
Q Electric pneumatic valves?
A Yes.
(Exhibit 37 marked)
Q Okay. Exhibit 37 -- I'm assuming that there was a 37a, but not 37 -- is the protocol from that inspection; is that correct?
A Yes. That's the initial protocol we went in there for that inspection.
Q And who all was present for that inspection that ended up taking place over September 30 and July 1st of 2011?
A Well, there was Greg Wright, myself, Aaron Jones, you and Ms. Rodriguez. There was also Alex Cook was there. He -- he had to leave toward the second day before we finished, but he was there predominantly most of the time.
Q Okay. And I -- I misspoke. I said September 30th. I meant July -- June 30 to July 1st --
A Excuse me.
Q -- of 2011.
A I should have caught that.
Q No, no. I think -- that's okay.
A I -- I should have caught that.
0329

Q Yeah.
A It's June 30 to July 1st.
Q It's been a very long day.
A There was also some other people taking pictures and -- and there -- and a video.
Q Did Mr. -- Mr. Jones, Aaron Jones, the Americanos expert in this case, participate in the inspection by being hands-on and actually helping with removal and testing of components?
A Him and Greg Wright as well as -- well, Alex Cook was there. He was also hands-on --
Q Do you --
A -- in some respect.
Q Okay. Do you know what Greg Wright's area of expertise is?
A His was there predominantly for the transmission.
Q Okay. Now, if the electrical -- tag axle electrical or air system either one is not operable, what does the tag axle do?
MS. RODRIGUEZ: Objection, form.
A The tag axle -- the tag axle lock --
Q (BY MS. DORMAN) Lock cylinder. Sorry.
A -- lock cylinder if there's no air with the spring, it -- it locks.

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Q And in your opinion, is it more probable than not that this air system that fed the caster cylinder and the lock cylinder were plugged before this accident happened?
MS. RODRIGUEZ: Objection, leading and form.
A It is more probable it was plugged before.
Q (BY MS. DORMAN) And why do you say that?
A Just because I don't see how it got plugged just sitting in the yard.
Q What was it plugged with? Do you know?
A It was -- it was oil and dirt inside the lines. The one fitting that we took off that was plugged and then we removed it and it unplugged itself, I don't know what it was plugged with. But the air lines were -- looked like was oil and -- and dirt.
Q Were those air lines ever able to be unplugged?
A When we flexed the lines, we did get some air through the lines.
Q Was it air that would even be sufficient to operate those two cylinders that I described before, the -- the caster latch cylinder and the tag axle lock cylinder?
MS. RODRIGUEZ: Objection, leading.
A Well, eventually if they did flex and give some,

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they would eventually build up pressure eventually.
Also we found though that the -- the

solenoid valves were not working. So all they would have done is then actuated on the tag lock, which is what were in part of the inspection was to -- would have been to lock -- try to lock it because the solenoid valve to unlock it did not work, which we found out also in the inspection.

Q (BY MS. DORMAN) Okay. So describe just very briefly what the solenoid does for the lock.

A The solenoid diverts the air to the tag lock. It's -- it -- the way it's set up is that if it's not actuated, it's in the locked position, it actuates to reverse the air to lift the tag lock.

Q In your opinion, is it more probable than not that the solenoid was not working before the day of the accident?

MS. RODRIGUEZ: Objection, form and leading.

A My opinion is that it probably was not working.

Q (BY MS. DORMAN) What else did you find inoperable or operating at less than -- than what you would expect?

A As I --

MS. RODRIGUEZ: Object to form.

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A As I stated before, the -- on the electrical system, the contactor was -- was in the -- was starting to fail and that the -- what we call the run contactor on that bus.

Q (BY MS. DORMAN) And what's the effect of it starting to fail?

A It was -- the voltage was dropping to the -- it was only around 3 volts to the tag components and the tag solenoid values and to the buzzer. And then as a result of that, you would not have enough electric voltage to be able to actuate those functions.

Q Okay. So when you say the -- only 3 volts, what would your voltage be if it were working properly?

A 24 volts.

Q So it was, if my math is correct, about an eighth of the voltage it should have been?

MS. RODRIGUEZ: Objection --

A Approximately --

MS. RODRIGUEZ: -- leading.

A Approximately an eighth.

Q (BY MS. DORMAN) Okay. And describe for us what components that -- that should have been able to operate had the voltage been correct.

A It was the speed switch, the tag axle lock solenoids as well as the caster steer solenoid. It was

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also the -- it also provided power for the generator on the transmission that we had found was not a hundred percent. And it provided the voltage for all those components.

Q And you described a buzzer earlier, didn't you?
A The buzzer is the one in the driver's area to assist the driver along with the indicator lights.
Q Okay. So if -- if an indicator light for the tag axle is burned out and the buzzer doesn't have enough voltage to work, how is a driver going to be alerted that there's an unlocked tag axle above 20 miles an hour?
MS. RODRIGUEZ: Objection, form and leading.
A I don't know how he would be alerted.
Q (BY MS. DORMAN) Are those conditions something that would be maintenance issues --
A Those are --
Q -- Mr. Hoogestraat?
A Those are --
MS. RODRIGUEZ: Objection, form. Leading.
A -- maintenance issues.
Q (BY MS. DORMAN) Tell me about the -- the inlet piping that you checked at the back of the bus. Why did you check that?
A Because as I stated previously, there looked to

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be dirt in the air system, so I was trying to figure -- just looked over there to see how the dirt intrusion come in. We pick up our air downstream of the air cleaner for the air system and it goes into the air compressor. And when I looked over there, that's when I saw that the -- the connection to the air cleaner had been disconnected or it was partially connected. It was a gap there. So it was not drawing air through the air cleaner.
Q And what's the effect of the air system being connected improperly or -- or partially?
A Well, you would draw in outside air not through the air -- air cleaner, which then you would be drawing in unfiltered air.
Q And is it more probable than not in your opinion that that condition existed before the accident?
MS. RODRIGUEZ: Objection, form and leading.
A In my opinion, that -- that occurred before the accident.
Q (BY MS. DORMAN) What do you base that on?
A Just that I don't see how the accident caused the hose connection to get disconnected.
Q And you wouldn't expect to see so much dirt in the air plumbing without that sort of misconnected air system, would you?

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MS. RODRIGUEZ: Objection, leading.
A There could be various ways dirt got in -- intrusion got into the air system. All I said is this -- this is a possibility of how it got there.
Q (BY MS. DORMAN) Did you make any observations about how the air system was routed or plumbed as you

sometimes say?
A There was some plumbing changes that we -- when we started into this, there was a check valve installed backwards. We thought maybe that was the reason why there was not air to the -- to the solenoid valves. We later determined that, yes, it was installed backwards, but somebody had plumb-- made some plumbing changes. So the air was coming to the manifold from somewhere else.
We did not research where that somewhere else was from because part of our protocol was to determine if the tag axle locking system was working or not. The electrical and the air was something that came as a result of not finding it electrically working.
So, no, we did not find out how it was re-plumbed. We just not-- found out the check valve was backward and there was some plumbing change to accommodate it.
Q What does -- where is the check valve in the -- the plumbing system and how does it work?

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A Well, the check valve is a -- is a protection for that -- that park brake tank and it just comes off of it for that. And that's where we connect in for the air system for the auxiliary systems.
Q And -- and how does it work? Is it a one-way valve, two-way valve?
A It's a one-way valve.
Q And so the fact that it was installed backwards meant what?
A That it -- you -- you couldn't get air -- the direction the air was supposed to come out of it, it couldn't do that because the check valve was installed backwards.
Q And in your opinion, is it more probable than not that that condition existed before the day of the accident?
MS. RODRIGUEZ: Objection, form and leading.
A I don't know how the -- a check valve in an air plumbing system could get reversed after the accident or in the accident.
Q (BY MS. DORMAN) So it had --
A It was a screw-in component.
Q Okay. So it was equipped that way as far as you know at least before the accident, correct?

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MS. RODRIGUEZ: Objection --
A That would be --
MS. RODRIGUEZ: -- leading.
A -- my opinion.
Q (BY MS. DORMAN) Was -- when you looked at the telltale dash lights, which are the -- the lights that illuminate on the -- the dash of the driver's area, was the stop engine lightbulb present?

A No.
Q Was the check engine lightbulb present?
A There was a bulb in there.
Q Okay. And were any of the bulbs the wrong voltage or strength?
A The check engine bulb was -- looked to me like to be a 24-volt bulb because it was very dim.
Q Okay.
A And it gets -- because in that bus the DDEC system supplies 12-volt to that indicator lamp; therefore, it -- with a 24-volt bulb, it would have been very dim.
Q Mr. Hoogestraat, going over your -- your resume, you've been director of engineering -- you were director of engineering rather from 1995 to 2002 for Motor Coach Industries; is that correct?
A I've been director in engineering in various

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things since about 1987.
Q Okay. Was that when you were with Transportation Manufacturing Corporation?
A Yeah. At one time that was part of that organization.
Q So it was a part of MCI?
A Well, MCI, the corporate structure, I think it's called MCI International or something. I think it was part of that corporate structure.
Q And your current title is vice president of engin-- engineering design --
A Yes.
Q -- is that correct?
A That's correct.
Q And you've held that for two years?
A Yes.
Q And counsel for Americanos chose to read to you a few words on each bullet point of your -- your description of what your responsibilities and your duties are.
Would you describe for us just briefly what your responsibilities and duties are as vice president of eng-- engineering design for Motor Coach Industries International?
MS. RODRIGUEZ: Object to sidebar.

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A Part of my job is to -- I go -- I work on programs. I work with the engineers on programs. I review some of their designs. I -- designs that they're doing, the major efforts that we are doing. I go as far -- and do -- work with them on the evaluation of all -- of the designs that are in process.
Q (BY MS. DORMAN) Do you rely on your experience and your -- your education and your training when you do your job as vice president of engineering design?
A Predominantly my experience, but yes.

Q And in arriving at the opinions that you've rendered in your report in here today, have you relied upon your experience, your education and your training to provide those opinions?
MS. RODRIGUEZ: Objection, leading.
A Yes.
Q (BY MS. DORMAN) Can you tell us what kinds of buses you've designed?
A I've worked on buses ever since 1982.
Q Okay. Can you just --
A That was a Volvo --
MS. RODRIGUEZ: Objection, nonresponsive.
THE WITNESS: Excuse me?
MS. RODRIGUEZ: I didn't realize you weren't finished.

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A I've worked on buses since 1982. Those were Volvo buses. They were Volvo artic.
Q (BY MS. DORMAN) Wait. Say that again.
A Volvo articulated bus.
Q Oh, articulated. Okay.
A And a Volvo transit bus. Those are transit buses. In 1985 I came to MCI -- or to TMC. Excuse me. And then we worked on intercity buses until 1987. And then approximately thereof then I started -- they bought the RTS group from General Motors. And I worked on the RTS until 1996. And then I was back in the intercity coaches and I was working on an intercity bus up to -- intercity buses up to today.
Q And what systems have you designed for buses?
A I've designed electrical systems. I've designed air systems. I've designed plastic parts for buses. I've been involved in -- in the design of frames of buses. I've been involved in the design of drivetrain installations. I've been involved in suspension systems. Because you're over the bus, you're over all the systems.
Q Would you expect a motor carrier like Americanos to know and understand how to achieve and perform basic maintenance on its coaches that it operates?
MS. RODRIGUEZ: Objection, form and leading.

0341

A Americanos and Greyhound have been in business a long time. I would expect them to know how to do maintenance.
MS. RODRIGUEZ: Objection, nonresponsive.
Q (BY MS. DORMAN) I'm going to show you a photograph of a coach that was claimed to have been involved in a driveshaft incident. This is the Mount Gretna or Harrisburg, Pennsylvania coach.
MS. DORMAN: Whoa. Sorry.
Q (BY MS. DORMAN) Do you remember reading about that accident?
A That's the stuff I -- that's the accident I saw

on the news, yes.
Q Yes.
And Ms. Rodriguez showed you some photographs of a tag axle assembly, the locking plates that were sort of pried open. If we could --
A Yes.
Q And it's my understanding that those -- here we go. 6352 is the unit. These photographs go with that coach from Exhibit 24.
A I believe that's what --
MS. RODRIGUEZ: Object to form and sidebar.
Q (BY MS. DORMAN) Have -- did you review the photos that are associated with this bus accident that we

0342

were provided from Greyhound and Americanos?
A These photos?
Q Yes.
A Yes. I saw these photos. Yes.
Q That Aaron Jones took?
A Yes.
Q And this bus is on its -- well, describe what you see in the scene from The Patriot-News about the bus accident.
A Looks to me like the bus -- based on the skid marks, it came from over there. And my understanding -- and I'm trying to read it -- it hit these retaining wall and then it came here. And I'm not sure how it ended up in -- going the opposite direction on its side.
Q Okay. So it's facing the wrong way in the roadway; is that correct?
A That's what it looks to me like.
Q And do you have any knowledge of whether the driver was cited in connection with that crash?
A I'm not aware of that.
Q All right. Do you know any other details of what might have been impacted by the bus during the accident sequence?
MS. RODRIGUEZ: Objection, form.
A No, I don't. Like I stated previously, I was --

0343

when stuff I read, it sounded like it hit the barrier and then it came up here. I don't know what it all hit.
Q (BY MS. DORMAN) Okay. Do you know what caused the clamp, the -- the axle-mounted locking plates to essentially open and spread apart?
A Not at this time.
Q All right. That certainly doesn't look like the evidence in our case, does it?
MS. RODRIGUEZ: Objection, leading.
A Well, certainly ours wasn't opened up like that.
Q (BY MS. DORMAN) Okay. Do you see any marks on that assembly that are induced from the bottom up rather than the top down?
MS. RODRIGUEZ: Objection, form and

leading.
A Bottom up?
Q (BY MS. DORMAN) Yes, sir.
A Well, the top plate got bent up. And I'm not sure how it got bent up.
Q But as far as marks around here, around the bottom plate, does it appear to have been hit from the bottom up or the top down?
A Well, that looks like it's from the top down.
Q And that's different than the evidence in our --
A Yes.

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Q -- accident --
MS. RODRIGUEZ: Objection --
Q -- correct?
MS. RODRIGUEZ: -- form and leading.
Q (BY MS. DORMAN) Have you been provided any of the accident reports or witness statements or driver statements or -- or police reports from these three other Greyhound coaches who have had these alleged driveline failures?
A No, I have not.
Q Have you been provided with any information about how these accidents happened?
MS. RODRIGUEZ: Objection --
Q Or incidents --
MS. RODRIGUEZ: -- form.
Q (BY MS. DORMAN) Or these incidents happened?
A As stated previously, the only information I know on the Harrisburg is what's on the news.
Q And -- and what you saw from Aaron Jones. Is that fair to say?
A And from Aaron Jones. That was -- that was --
MS. RODRIGUEZ: Objection, leading.
A -- reported to be part of that.
Q (BY MS. DORMAN) And do you know how these accident sequences or incident sequences unfolded?

0345

A No, I do not.
Q So you can't say that these are similar incidents without knowing much more information about these incidents, could you?
A I do -- as --
MS. RODRIGUEZ: Objection, leading.
A As stated previously, I -- that's all I know. I do not know.
Q (BY MS. DORMAN) In looking at the accident coach that's associated with Exhibit 24, did you have a chance to look at the -- the tag axle assembly itself? Let me try to pull it up here.
First of all, do you remember looking at the photos of the coach that was involved in the Harrisburg, Pennsylvania accident yesterday?
A Yes. That's -- I believe that came from Aaron

Jones.
Q Okay. And did you have any observations about the condition of the engine mounts or any of the other components that you see in this photograph? It looks to be his photo number DSC0045.
MS. RODRIGUEZ: Objection, leading.
A Not from the engine mounts, no.
Q (BY MS. DORMAN) Okay. What -- do you have any other observations about the conditions shown in that
0346
photo?
A No. I mean, I -- something you got to look at.
Q Did anything appear to be pushed over?
MS. RODRIGUEZ: Objection, leading.
Q (BY MS. DORMAN) Oops. Let me back up.
A Well, if -- if -- not in that picture, but --
Q Okay. Why don't you scoll -- scroll through real quick and...
A Oh, what did I do now?
Q Oh, I think that's -- right -- there you go.
A What I was looking at is that.
Q Okay. Which is --
A Which is the output of the transmission.
Q Okay.
A I was looking also at the air bags, which it's hard to -- if you look at that air bag, which is on the right-hand side.
Q And that's DSC0069.
A And if you look at the air bag on the -- where'd it go? Oh, come on.
Q Was that the damper?
A That was the damper that was broke.
Q So while you're searching for that other photo of the air bag, what did those -- the appearance of those components tell you?
0347
A Well --
MS. RODRIGUEZ: Objection, form.
A -- the -- the tag axle had been shifted to the right. Those three both -- all show the tag axle had been shifted to the right --
Q (BY MS. DORMAN) The --
A -- significantly.
Q Okay. The tag axle itself or just the tie rod?
A No. The tag axle itself. You can see it here also in that air bag. That's not the best picture.
Q That is --
A But it --
Q -- 157.
A But it shows that this had been shifted to the -- what I call the curb side or the right of the -- of the -- of the bus.
Q Do you see that in -- in the subject accident involving the Americanos coach?

A No.
Q So it's entirely possible that we've been given very limited information in an attempt to conclude that these are similar incidents, but if you look at the actual photos and if you had more information, you might be able to conclude that they're not, correct?
MS. RODRIGUEZ: Objection, leading.

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Sidebar.
A What I'm trying to say is you have to look at this in much more detail because these look like the axle had been shifted to the right, which it's not on Americanos.
Q (BY MS. DORMAN) Okay.
A So I'd have to look at it.
Q All right. Let's look at Exhibit 8, if you could find that one.
MS. DORMAN: It might be way down here. Thank you.
Q (BY MS. DORMAN) That has been represented to you to be an -- a driveline of a Van Hool coach?
A Yes.
Q Do you know what model that is?
A No.
Q Were you provided with that information?
A No.
Q Tell me what differences you see, if any, between the driveline of -- I'm sorry -- the driveshaft of what's equipped in the subject coach, the Americanos coach, and what's equipped there on the Van Hool coach?
A It's certainly a much longer driveshaft.
Q Do they have a different configuration of their suspension --

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MS. RODRIGUEZ: Objection --
Q -- based on that photo?
MS. RODRIGUEZ: Objection, leading.
A I can't tell from this photo. Certainly the -- the axle is different at the back end. As far as its location, it looks like that's the drive-- it's -- the picture kind of looks to -- to the drive axle, but I can't tell that for sure. I mean, it's a -- it just shows the dri-- the driveshaft and two loops and some framing components and -- and a valve.
Q (BY MS. DORMAN) Okay.
A But I can't -- I -- that may be the drive axle. It looks like it is in the front part of the picture, but I can't tell if that's all the part of the picture there is.
Q Okay. And is the -- the driveshaft, again, longer or shorter than what we have in our subject coach?
A From the looks of this picture, it looks longer.
Q Let me look at my notes, but I think that's all I have. Thank you, sir.

MR. RAMIREZ: I just have a few.
MS. DORMAN: Okay.
EXAMINATION
BY MR. RAMIREZ:
Q Mr. Hoogestraat, good afternoon. We've been
0350
here for quite a while, so I'm not going to belabor the points that have been raised already.
From my review of your resume, it appears that you've been working as a mechanical engineer for almost 40 years. Would that be accurate?
A It's been for a while.
Q And you've reviewed design plans, you've designed things, you've tested things and you've worked in conjunction with local authorities and interfaced with the federal government. Would that be accurate?
MS. RODRIGUEZ: Objection --
A Yes.
MS. RODRIGUEZ: -- leading.
Q (BY MR. RAMIREZ) And as an engineer, do you -- as part of your education and your training and your work experience, do you have to follow certain methods to make sure that the work that you do is scientifically sound?
A We try to.
Q Okay. Can you briefly describe what that is and have you adhered to it in this case -- your work in this case?
MS. RODRIGUEZ: Objection, form and leading.
A I'm not sure I understand. In general terms what we do is we do design and then where appropriate, we
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do testing of that design in that regard. We do design today where we have other parties come in and review the designs today. I don't know if that was done in 1992. But today that's what we do.
We also, if there's testing required, we do the testing requirements and we do it as part of the normal engineering function.
Q (BY MR. RAMIREZ) Now, with regard to the work and the opinions that you've given to us today and provided in your report, would it be fair to say that you adhered or you followed that same scientific method or that methodology in terms of testifying today in your opinion?
MS. RODRIGUEZ: Objection, leading.
A My opinion is mostly based on my -- my -- my history with working on buses.
Q (BY MR. RAMIREZ) And in this case, did you evaluate the design, the manufacture and the adequacy of the warnings and instructions concerning the subject motor coach that was involved in the crash that occurred in this case on or about March 16, 2010?
A At the -- I looked at the warnings systems that

we had and I felt they were adequate.
Q Did you look at the design and the manufacture as well?

A Yes, I did.
Q And what -- what was your opinion in that regard?
A I felt it was adequate.
Q With regard to the opinions that you've given in your report and the opinions that you've provided today in response to questions from counsel, did you express such opinions within a reasonable degree of engineering probability or certainty?
MS. RODRIGUEZ: Objection, form and --
A In my --
MS. RODRIGUEZ: -- leading.
A In my opinion, I did.
Q (BY MR. RAMIREZ) Regarding the position asserted in this case by Americanos, in your -- in your report you allude to the fact that they are claiming that a failing driveshaft contacted the tax -- tag axle tie rod of the subject bus causing the tax -- tag axle to unlock causing the driver of the bus to lose control, swerve into the median and roll to the passenger side. Did I state that accurately?
A Yes.
Q And do you agree with that proposition or do you disagree with it?
MS. RODRIGUEZ: Objection, form and leading.
A As I stated, that was my opinion.
Q (BY MR. RAMIREZ) That you -- do you agree with that or do you disagree with their position?
A Could you restate it again, please?
Q The position that you stated in your report that -- that Americanos, the bus company, has said in this case is that they are claiming that a failing driveshaft contacted the tag axle tie rod of the subject bus causing the tag axle to unlock causing the driver of the bus to lose control, swerve into the median, then roll to the passenger side, do you agree or disagree with that?
A Disagree.
Q I'd like to thank you for your time. I appreciate it.
MR. RAMIREZ: Pass the witness.
MS. DORMAN: You still have 13 minutes. Do you want to take a break or do you want to keep going?
THE WITNESS: No. Let's --
THE REPORTER: Actually, they have 10 minutes.
MS. DORMAN: 10 minutes? Okay. Thank you for clarifying.

10 minutes.

THE WITNESS: All right.

MS. RODRIGUEZ: All right. We'll hopefully give you some time back.

EXAMINATION

BY MS. RODRIGUEZ:

Q Mr. Hoogestraat, one thing we know you haven't designed is a second driveshaft guard for a 102DL3, correct?

MS. DORMAN: Object to form.

A That's correct.

Q (BY MS. RODRIGUEZ) And the buzzer on the Americanos bus, even though it had low voltage, it worked. You heard it, didn't you?

MS. DORMAN: Object to form.

A As you re-- as -- as I recall, the buzzer was driving us nuts when we were trying to work on the bus. Then all of a sudden, it got very low. And we -- and that's what prompted us to start to check why did the noise get so low. And then that's why we found the low voltage. It was --

MS. RODRIGUEZ: Object --

A It was working, but very low in volume.

Q (BY MS. RODRIGUEZ) You remember the buzzer being low in volume when it --

A Yes.

Q -- was working?

A Yes. When --

Q All the time?

A Not all the time. Like I said, in the report when we cycled the switch on, it was very loud, and as I stated previously, annoying. And then all of a sudden, it dropped down. And that's when we looked into what had occurred.

Q Do you have any notes on how long it was loud and annoying?

A No, I do not.

Q Do you have a memory as you sit here today on how long it buzzed when it was loud and annoying?

A We were working around there and it was at least an hour that it was buzzing and loud and annoying. And then later, all of a sudden it had dropped out.

Q When I took your deposition back in June, you told me that you did not have an opinion on when the lock plate separated on the Americanos bus. Is that still the case today?

A I don't know when it separated exactly.

Q Thank you.

MS. RODRIGUEZ: I'll pass the witness.

MS. DORMAN: Anyone else?

I believe you're done.

THE WITNESS: Thank you.
THE VIDEOGRAPHER: We're off the record at 5:52.
(End of proceedings at 5:52 p.m.)

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CHANGES AND SIGNATURE

VIRGIL HOOGESTRAAT SEPTEMBER 23, 2011

Page/Line	Change	Reason

0358

I, VIRGIL HOOGESTRAAT, have read the foregoing deposition and hereby affix my signature that same is

true and correct, except as noted above.

_____
VIRGIL HOOGESTRAAT

STATE OF _____)
COUNTY OF _____)

Before me, _____, on this day personally appeared VIRGIL HOOGESTRAAT, known to me (or proved to me under oath or through _____) (description of identity card or other document) to be the person whose name is subscribed to the foregoing instrument and acknowledged to me that they executed the same for the purposes and consideration therein expressed.

Given under my hand and seal of office this _____ day of _____, 2011.

_____
NOTARY PUBLIC IN AND FOR
THE STATE OF _____

My Commission expires: _____

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CAUSE NO. 2010-03-1717-C

DANIEL CAMPOS, ET AL., Plaintiffs, VS. AMERICANOS, U.S.A., L.L.C., ET AL., Defendants.) IN THE DISTRICT COURT OF) 197TH JUDICIAL DISTRICT) CAMERON COUNTY, TEXAS

REPORTER'S CERTIFICATION
VIDEOTAPED DEPOSITION OF VIRGIL HOOGESTRAAT
SEPTEMBER 23, 2011

I, Christi Fuhrmann, Certified Shorthand Reporter in and for the State of Texas, hereby certify to the following:

That the witness, VIRGIL HOOGESTRAAT, was duly sworn by the officer and that the transcript of the oral deposition is a true record of the testimony given by the witness;

That the deposition transcript was submitted on the _____ day of _____, 2011 to Ms. Melissa Dorman, Hartline, Dacus, Barger & Dreyer, L.L.P., 6688 North Central Expressway, Suite 1000, Dallas, Texas 75206 for

examination, signature, and return to Compex Legal Services, Inc. by the _____ day of _____, 2011;

That the amount of time used by each party at the deposition is as follows:

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MS. RODRIGUEZ: (3 hours, 35 minutes)
MR. DOMINGUEZ: (1 hour, 19 minutes)
MR. VIDAURRI: (57 minutes)
MR. BULLION: (7 minutes)
MS. DORMAN: (37 minutes)
MR. RAMIREZ: (4 minutes)

That pursuant to information given to the deposition officer at the time said testimony was taken, the following includes all parties of record:

Mr. Roberto L. Ramirez, The Ramirez Law Firm, PLLC, 820 East Hackberry Avenue, McAllen, Texas 78501, Attorney for Plaintiffs, Leonor and Selina Aguilar.

Ms. Tamara L. Rodriguez, Mr. Nicholas B. Dominguez and Mr. Steven M. Vidaurri, Vidaurri, Lyde, Rodriguez & Haynes, L.L.P., 202 North Tenth Avenue, Edinburg, Texas 78541, Attorneys for Defendants, Americanos USA, L.L.C., Greyhound Lines, Inc., and Irma Mendoza Morado.

Ms. Melissa Dorman, Hartline, Dacus, Barger & Dreyer, L.L.P., 6688 North Central Expressway, Suite 1000, Dallas, Texas 75206, Attorney for Defendants, Motor Coach Industries, Inc. and MCI Service Parts, Inc.

Mr. Thomas M. Bullion, III, Germer & Gertz, L.L.P., 301 Congress Avenue, Suite 1700, Austin, Texas 78701, Attorney for Defendant, ArvinMeritor, Inc.

I further certify that I am neither counsel for,

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related to, nor employed by any of the parties or attorneys in the action in which this proceeding was taken, and further that I am not financially or otherwise interested in the outcome of the action.

Further certification requirements pursuant to Rule 203 of TRCP will be certified to after they have occurred.

Certified to by me this _____ day of _____, 2011.

_____

CHRISTI FUHRMANN
Texas CSR No. 7865
CSR Expiration Date: 12/31/12

COMPEX LEGAL SERVICES
Texas CRCB No. 281
3201 Cherry Ridge Drive
Suite B-207
San Antonio, Texas 78230
(800) 969-6424

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FURTHER CERTIFICATION PURSUANT TO RULE 203 TRCP

The original deposition was ___ was not ___ returned to the deposition officer on the ____ day of _____, 2011.

If returned, the attached Changes and Signature page contains any changes and the reasons therefor;

If returned, the original deposition was delivered to Ms. Tamara L. Rodriguez, Custodial Attorney;

That $_____ is the deposition officer's charges to Defendants, Americanos USA, L.L.C., Greyhound Lines, Inc., and Irma Mendoza Morado, for preparing the original deposition transcript and any copies of exhibits;

That the deposition was delivered in accordance with Rule 203.3, and that a copy of this certificate was served on all parties shown herein and filed with the Clerk.

Certified to by me this _____ day of _____, 2011.

_____

CHRISTI FUHRMANN
Texas CSR No. 7865
CSR Expiration Date: 12/31/12

COMPEX LEGAL SERVICES
Texas CRCB No. 281
3201 Cherry Ridge Drive
Suite B-207
San Antonio, Texas 78230
(800) 969-6424

August 11, 2011

Mr. John Dacus
Hartline Dacus Barger Dreyer LLP
6688 North Central Expressway
Suite 1000
Dallas, TX 75206

Re: [redacted] Americanos USA, LLP, et al., accident involving 1995 MCI model 102DL3 motor coach on March 16, 2010, near Campbellton, Texas

Dear Mr. Dacus:

You asked me to prepare a report summarizing my involvement in evaluating the subject coach, a 1995 102DL3, and the claims made by Americanos USA, LLC in this case. I understand that the subject coach was manufactured and sold to its original owner in November of 1994. The coach had VIN 1M8PDMPA2SP[redacted], and at the time of the accident, was designated by Americanos as Unit 60630. I understand Americanos is claiming that the flailing driveshaft contacted the tag axle tie rod, causing the tag axle to unlock, which caused the driver to lose control of the coach, swerve into the median, and roll the coach onto its passenger side. I disagree with this allegation, and it is my opinion that the subject coach was not defective in its design or manufacture. Further, Motor Coach Industries, Inc. and MCI Service Parts, Inc. (collectively, "MCI") provided more than adequate warnings and instructions concerning the subject coach and the operation of all aspects of the steerable tag axle. MCI complied with applicable federal safety regulations in the design and manufacture of the subject coach. In addition, MCI designed and manufactured the subject coach as to allow the users of such coaches to comply with the federal regulation applicable to users of motor coaches that requires motor coaches to be equipped with at least one guard for a drive shaft. The accident did not occur because of any condition of any of the tag axle assemblies or features. Further, the drive shaft and drive shaft attachment design and manufacture were appropriate and similar designs have been used successfully for many years in commercial vehicles. Failure to properly maintain the drive shaft and the drive shaft attachments to the transmission caused the failure of the drive shaft attachment to the transmission of the subject vehicle and the failure of the driver to note an impending failure of the drive shaft attachment to the transmission and take appropriate action to cease operating the coach caused the failure of the drive shaft attachment while the vehicle was in operation. The subject coach was neither defective nor unreasonably dangerous.

I participated in several inspections of the subject coach and have also reviewed the related engineering design documents, maintenance manual, and parts manual pertaining to that model coach. The subject coach was inspected at Suburban Towing in Louisville, Kentucky. I also inspected exemplar coaches as part of my analysis of the claims made by Americanos against MCI. I also reviewed photographs of the coach at the scene of the accident. I also reviewed video of exemplar coach testing performed by MCI consultant Kevan Granat, and I have spoken to MCI consultants Kevan Granat, Bob Rucoba, Greg Wright, Pat Mears, and David Coates during the investigation of Americanos' claims. As part of my investigation and analysis, the attached list of materials has been reviewed. A summary of my work history and education is also attached.

The subject coach inspections and findings are listed below.

1. Subject Coach Inspection on July 27, 2010: This was a visual inspection only since the parties were not allowed to remove any components. I observed the overall condition of the coach post-accident, and concentrated on the steer axle, drive axle, and tag axle. It was apparent that the drive shaft had become disconnected at the transmission end first and rotated for some time before becoming disconnected at the differential end as well. I examined the tag axle lock cylinder and plates and found the tag axle steering lock to be extended, but the middle (tie rod-mounted) lock plate was not in its intended position. It was found to be below the axle-mounted locking plates. The tag locking pin was extended through the tag locking plates. The tie rod was bent forward, toward the front of the coach, and the steering damper was in place, but had moved slightly where it clamps to the tie rod. It appeared that the tie rod had been pushed toward the driver's side of the coach against the fully-extended tag axle steering damper, such that the tie rod moved within the clamping device which holds the end of the steering damper to the tie rod. There were several contact marks at the tag axle drive shaft pass through, which is described in the MCI 1995 102DL3 Parts Manual as the latch arm assembly, as well as in the drive shaft guard. The steering stops were in place, but the right side steering stop was bent. The tag axle lock cylinder was intact and appeared to be undamaged. The middle locking plate had an outline of the place where it inserted into the axle-mounted locking plate assembly, and it appeared to have contact rusting. The driveshaft was covered in old grease and dirt. One of the u-joints was still attached to the driveshaft at the differential/drive axle end. The differential end yoke was present, with one strap partially detached. The transmission end yoke had one strap missing, and one detached at one end.

I also observed the photos of the evidence recovered at the scene. These photographs showed components of one or more u-joints, including needle bearings, end caps, and dust rings, as well as a u-joint strap, bearing cap straps, and pieces of the drive shaft ears from the transmission end. The end caps showed evidence of brinelling.

2. Subject Coach Inspection on November 4, 2010: During this inspection, MCI consultant Kevan Granat mapped the bus and also took photographs. No destructive testing was performed, and no components were removed from the coach. I observed the subject coach and it appeared to be in the same condition as it was during the July 2010 inspection.

3. Subject Coach Inspection on January 11, 2011: For this inspection, I had provided an electrical testing protocol so that the function of the tag axle electrical system could be checked. However, we were not permitted to proceed with that evaluation. The parties removed the half-round yokes from the transmission and differential ends, and they were sent for metallurgy evaluation. The coach had been stored outside, and was only partially covered. It had been snowing, and the temperatures were near or below freezing, so it took some time for the coach to arrive at Suburban Towing. It appeared to be in the same condition as it was during the November 2010 inspection. The parties attempted to download DDEC data, but the device used by Americanos' consultant would not communicate with the DDEC.

4. Subject Coach Inspection on June 30 – July 1, 2011: During this inspection, the parties evaluated the transmission, the tag axle electrical system, and the tag axle air system. The tag axle is a self-steering steerable tag axle, which means that the tag wheels caster behind the drive (dual) wheels. A diagram of how the tag axle system works to allow the tag axle to be steered is attached as Exhibit A.

The transmission inspection showed that there was normal-looking oil in the transmission, with no indication of burning. The shavings and particles in the transmission pan were not unusual.

The parties then used an oscilloscope and a volt-ohm meter to test the electrical system for the tag axle. We found that the signal generator was open on one leg, resulting in less than half the amplitude output. The signal from the generator at the speed switch was very weak and very low in amplitude. Transmission consultant Greg Wright manually rotated the transmission output at 50 RPM speed, to allow measuring the amplitude of the generator output both at the connection at the vehicle rear junction box and at the speed switch. In addition to the low amplitude of the signal, the signal quality was poor quality. Aaron Jones, Americanos' expert, tested the generator for resistance and found the open circuit. The parties then checked an exemplar speed sensor for voltage and frequency at approximately the same RPM as the transmission was manually rotated. The exemplar generator output amplitude was more than twice the amount of the subject sensor at approximately the same RPM. The amplitude was measured and recorded by other consultants.

If the tag axle electrical or air system are not operable, the tag axle defaults to the locked position since the tag lock assembly has a spring-loaded locking pin. If there is an electrical system failure or there is no unlock signal to the unlock air solenoid valve, the air system pressurizes the lock cylinder to lock the tag axle. While the tag axle plates were not in their original configuration after the accident, the locking pin was extended, indicating the tag axle would have been locked.

In order to unlock the tag axle steering, the tag axle cylinder's solenoid valve receives the signal from the electrical controls, and the valve then opens to send air pressure from the coach's air system to the tag axle lock cylinder. When we tested the electrical system and actuated the tag axle unlock signal to the unlock solenoid valve, we found the tag axle cylinder did not actuate. The electrical system was then checked to determine if this failure was caused by an electrical issue, and we found the electrical signal at the tag unlock air solenoid valve. The air pressure at the tag unlock cylinder was then checked with electrical signal to the tag axle unlock solenoid and no air pressure to the unlock side cylinder. It was then also found there was no air pressure on the lock side of the air cylinder.

The parties next attempted to check the air system that provided air pressure for the tag axle components, because there was no air sent to the tag unlock or caster steering valves as found in the electrical checkout. My review of the air plumbing, or the configuration of the hoses and their connections to tanks and components, revealed significant modifications, presumably by Americanos. The maintenance manual contains an as-built schematic that shows the intended placement of the air system components. The check valve to the rear rise air tank was found to be installed backwards, so the rear rise air tank was empty. Due to this configuration, the air plumbing had to be changed so air could not go to the rear rise air tank. Although the rear rise could still function, the result is that the rear rise function will be very slow. Also, air coming from the rear manifold, that was supposed to be plumbed to the park brake tank through the check valve, had been plumbed to another location.

The air pressure to the tag axle air solenoid valves is provided from an air manifold in the rear of the vehicle that originally was supplied air from downstream of the check valve that now was installed backwards. However, due to the plumbing changes that had been made, there was air pressure feeding the rear air manifold that fed the tag locking and steering system. However since there was no air pressure at the tag steering and unlocking solenoid valve, the parties then checked the tee at the manifold where the air hose to the tag valves connected. The tee connection at the manifold was removed and found to be plugged. Then the air hose from the manifold tee to the tag axle solenoid valves was removed and checked, and it was found also to be plugged.

The parties then connected air pressure directly the input to the tag air solenoid valves, bypassing the air manifold and the airline previously found plugged. Air pressure was then found to the lock side of the tag lock cylinder. We then attempted to electrically actuate the tag unlock solenoid, but the valve would not operate, as evidenced by no air pressure to the unlock side of the unlock air cylinder. Because the air lines were blocked, and because the unlock solenoid had failed, the tag axle cylinder could not operate as intended. Either condition could cause the cylinder not to operate: the failure of the unlock solenoid valve or the air system blockage. The tag axle was therefore in the locked position, with the pin extended through the tag axle lock plates. Since it was presumed the air blockage was caused by dirt in the air system, the air inlet to the air compressor, which is downstream of the engine air cleaner, was checked. The air inlet piping to the engine downstream of the air cleaner was found to be disconnected, allowing unfiltered air to be pulled directly into the air compressor.

The parties determined no further testing of the tag unlock electrical or air system was necessary, because it was apparent that the tag axle lock cylinder could not receive compressed air to function so as to unlock the tag axle steering lock.

I then boarded the bus to check the telltale/dash light system. I powered the coach and found that the two tag axle warning lights were burned out. The MCI D Series Operators Manual describes the function of these warning lights as follows:

The self-steering feature is equipped with two warning lights, a warning buzzer and a manual over-ride switch. The two warning lights are located in the left-hand telltale and are identified as "TAG STEERING" and "TAG LOCKED". If the "TAG STEERING" remains "ON", this indicates that the trailing axle is in the wrong position for the direction in which the coach is to travel. If such is the case, the coach should be stopped immediately. If the "TAG LOCKED" light remains "ON", either the axle is unlocked above 20 mph, locked below 15 mph, or the manual over-ride is engaged.

Also, the "stop engine" light bulb had been removed, but the "check engine" light was operable. The "stop engine" light illuminates to tell the driver there is a very serious problem with the engine, and the coach should be brought to a stop immediately. The "check engine" light indicates a problem with the engine that needs attention.

I found electrical continuity from the rear junction box to the speed switch. The tag steer, tag lock relays and warning buzzer worked as well. The wiring to the air valves next to the rear junction box checked was working. The shield to the speed switch signal was grounded on both ends, and thus was unshielded. The ignition relay dropped to approximately 3 volts on output after being on for a period of time. The recycling ignition switch caused the voltage to go to battery voltage, and then would again decrease after a period of time. This affected the tag buzzer output as well as voltage to the tag lock solenoids, speed switch, and transmission generator.

Employees of Suburban Towing removed the tag axle cylinder plates and the middle locking plate and tag axle locking assembly from the subject coach, and they were boxed for further inspection. The tag axle lock pin was found to be bent forward toward the front of the bus.

5. Metallurgy inspection on July 20: During this inspection, I examined the parts removed from the tag axle assembly on July 1. Also present were MCI consultants Kevan Granat and David Coates, as well as Americanos consultant Aaron Jones. We examined the middle locking plate, the tag axle-mounted locking plates, and the tag axle lock cylinder. After inspecting these components, the parties agreed upon areas of the plates to be sectioned and subjected to hardness testing. My understanding is that all of the sections were within expected ranges. We were unable to test the tag axle lock cylinder.

6. Exemplar Coach Inspection on August 2, 2011: During this inspection, I examined 1995 102DL3 coach in Los Alamitos, California, to confirm the driveshaft/tag axle geometry and evaluate the ability of the driveshaft to contact the tag axle tie rod and tag axle lock assembly while attached to the differential/drive axle, but disconnected from the transmission half-round yoke end. I had previously evaluated the driveshaft and tag axle geometry using MCI engineering drawings and materials. During this inspection, I also evaluated the likely exit path for the driveshaft once it was fully detached from the differential/drive axle. MCI consultant Bob Rucoba took photographs and measurements of these evaluations. We also reviewed photographs of the subject coach as it came to rest on its passenger side at the accident scene, and found that there were no clear marks on the underside of the tag axle lock plate assembly.

I found the following:

A. With respect to the conditions found during my inspections (detailed above), the portion of the coach which were inoperative or not operating properly were the result of nonexistent or improper maintenance of the coach for commercial operation such maintenance is not the responsibility of anyone except the owner, operator, and/or the driver of the coach, to a certain extent. Generally the driver is responsible for pre-trip and post-trip inspections of the coach to identify problems, inoperative equipment or equipment that requires maintenance.

B. The driveshaft is contained within two guarding structures during its normal operation (attached to both the differential and the transmission half-round yoke ends). These two guarding structures are a drive shaft guard and the latch arm assembly. The latch arm assembly is a loop or guard which contains the drive shaft and is created by the configuration of the tag axle.

C. When the driveshaft becomes disconnected at the transmission half-round yoke end, it continues to be contained within the two guarding structures and cannot, in this condition, contact the tag axle tie rod or the tag axle locking assembly.

D. Following a disconnect of the driveshaft at the transmission half-round yoke end, if the driveshaft is then detached at the differential/drive axle, it continues to be contained within the two guarding structures and cannot, in this condition, contact the tag axle tie rod or the tag axle locking assembly. Only with continued spinning and impacts which alter the position of the spinning driveshaft, can the driveshaft reach an unlikely position where it might be able to escape the two guarding structures. Further, there is not enough ground clearance for such an escape while the coach is on its wheels.

E. When the coach is on its side and the drive shaft has become detached at both ends, there is sufficient clearance to allow the driveshaft to escape the two guarding structures, in only one position that I observed: driveshaft rear high (toward the floor of the coach) and driveshaft front low (away from the floor of the coach). Any such escape of the driveshaft from the two guarding structures would not place the driveshaft in a position to strike the tag axle tie rod or the tag axle lock assembly.

F. On the subject coach, there was evidence of an impact at the top of the latch arm assembly, which would be consistent with the driveshaft reaching the top of the latch arm assembly at some point during the entire sequence of this accident, most probably very near the end of the accident, when the coach was on its side.

G. MCI complied with applicable federal safety regulations in the design and manufacture of the subject coach. The 1995 102DL3 coach was manufactured to allow the user of the coach to be in compliance with 49 C.F.R. § 393.89, which requires at least one guard or bracket at the end of the shaft which is provided with a sliding connection. This requirement is applicable to Americanos and other operators of the coach.

H. Having evaluated the design, the manufacture, and the adequacy of the warnings and instructions concerning the subject coach it is my opinion that neither the tag axle steering (including the design and manufacture of the tag axle, the tag axle steering lock, tag axle steering mechanisms, tag axle castering mechanisms and other aspects of the tag axle) of the subject coach nor the drive shaft and drive shaft attachments to the transmission and differential/drive axle of the subject coach were improperly designed, defective in design and manufacture, or unreasonably dangerous. Likewise, the warnings and instructions concerning the subject coach were adequate and proper and did not render the subject coach defective or unreasonably dangerous.

All of the opinions in this report are expressed with a reasonable degree of engineering certainty. These opinions are based upon:

1. my training as an engineer,
2. my years of experience with the design and manufacture of motor coaches and other commercial vehicles,
3. my evaluation of engineering design documents, maintenance manuals and parts manuals pertaining to the 1995 102DL3 coach ,
4. my inspections of the subject coach referenced above,
5. my inspections of exemplar coaches,
6. my review of photographs of the subject coach,
7. information obtained from other experts regarding testing and analysis of matters relating to the subject coach and its component parts and assemblies, and
8. information obtained from my own experience and experience from others in operation and testing of performance of the 102DL3 coach

I reserve the right to supplement or modify my opinions if new information is received, additional testing or work is done by other experts, or additional opinions are provided by opposing experts.

Sincerely,

Virgil Hoogestraat

PE12-007

MCI

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Response 9

HT740 transmission inspection protocol - June 30 inspection

Protocol for inspecting the HT740 transmission in [redacted] v. Americanos, et al., June 30, 2011

The MCI coach to be inspected must be in a facility that either has a pit or a lift capable of raising the coach six feet in the air to facilitate the inspection and disassembly of the transmission.

The inspection will require the assistance of a qualified mechanic, most likely from Clark Power Services, Inc., the local Allison distributor in Louisville, KY, to assist with and supplies tools, parts and equipment to properly disassemble and reassemble the transmission.

Conditions discovered during the inspection that require steps not listed here will be discussed and mutually agreed to before proceeding.

Each step will be documented photographically.

1. Position the coach over a pit or lift that allows for access to the transmission and the underside of the bus.

2. Document the installation and present condition of the transmisssion.

3. Remove the transmission drain plug and drain the fluid into clean, 5 gallon containers. During draining, secure samples for analysis by all parties in the future, if requested. Secure the containers with lids.

4. Remove the bolts retaining the transmission oil pan to the pan adaptor. Remove the lower pan, drain off the remaining fluid and inspect any debris found in the pan.

5. Check the dipstick calibration and record.

6. If debris is found in the pan, use solvent (mineral spirits) to loosen and thin out the transmission fluid from the debris and filter the debris through a paint strainer. Inspect the debris to establish its origin. Bag and tag the debris as evidence as necessary.

7. Remove the oil suction screen, inspect and secure in a clean container.

8. Remove the transmission modulator and modulator valve pin, if it is the removable design.

9. Remove the valve body assembly from the transmission and inspect the top side of the valve body transfer plate for debris. If debris is found, collect and bag as necessary. Set the valve body in a protective container and cover.

10. Inspect the clutches that are visible and measure clutch clearances where possible. Inspect for evidence of clutch failure, free movement of the clutches and any evidence of “coning” of the clutches.

11. Rotate the forward clutch housing and look for free movement of the forward clutches in the housing.

12. Rotate the forward clutch housing while holding the 4^{th} clutch housing and check for free movement of the 4^{th} clutches.

13. Install an output yoke and manually rotate the output shaft. Inspect the operation of the forward, first and second clutches for free movement as the output shaft is rotated. Check for smooth operation of the planetary gear assembly.

14. Remove the 4 bolts that retain the governor cover and remove the governor. Inspect the governor. Secure in a clean container.

15. Inspect the tone wheel and magnetic pickup, if possible, visually or by using a boroscope.

16. Trace the wiring from the transmission output speed sensor and establish the termination point of the harness that leads from the sensor in the transmission rear housing. If possible, remove the output speed sensor with the harness still attached for testing. Inspect the tone wheel through the output speed sensor opening.

17. Place the speed sensor and harness into a test fixture and test the function of the unit as outlined by others.

18. Upon completion of the inspection, the transmission will be reassembled to an “as found” condition, using new gaskets for the pan and governor cover.

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Response 9

Tag axle electrical testing protocol - June 30 inspection

Protocol for Examination of the Subject Coach – June 30, 2011

As with any examination protocol of this nature, unanticipated conditions may require changes to this protocol on site. Changes in this protocol can be made upon the agreement of all parties present.

In addition, if wiring in the junction boxes is found not to be placed on terminal posts as originally supplied, wire tracing techniques will be used to identify the proper terminal posts for application of voltage ground and signals.

Prior to the execution of this protocol, the coach must be transported to a facility that has a pit for examining the tag axle and a 24 volt and 12 volt power supply with a minimum of 20 amps each available for powering the tag axle circuit and the indicator lamps in the driver's area. In addition, a DC volt and ohm meter with leads and a 40 foot length of wire to check wiring continuity from the rear to the front of the bus will be needed. To check the speed sensing function, a pulse width modulator is required. The shop shall be able to supply shop air between 90-120 psi to the vehicle.

1. Switch the battery disconnect switch off. ECM is not to be installed on the engine.

2. Open the front electrical junction box door located below the driver's window.

3. Open the left hand rear service door and remove the rear electrical junction box cover.

4. Photo-document the instrument panel including the settings of the switches, the front and rear junction boxes, the status of the tag axle lock, and the latching mechanism air cylinder. Document the setting of the tag axle lock switch in the instrument panel.

5. Remove the left hand instrument panel indicator lamp assembly in the driver's instrument panel to allow visibility to the back of the indicator lamp assembly. Do not pull excessively on the wires to cause them to disconnect. Photo document which indicator bulbs are installed. Reinstall the left hand instrument panel indicator panel assembly.

6. To check if the check engine light can be actuated in the instrument panel, conduct the following steps:
    a. In the left front exterior junction box, locate the DDEC stud block on the right hand side of the junction box.
    b. Connect 12 volt DC to stud 4 on the DDEC stud block and ground stud 9 on the DDEC stud block. Remove tie-wraps as necessary to allow connections.
    c. Photo-document if the check engine light in the LH instrument panel indicator lamp cluster is actuated.

d. Remove 12 volt DC connection to stud 4 on the DDEC stud block and the ground on stud 9.

7. To check if the tag axle indicator lamps function, conduct the following steps:
    a. Locate 24 volt bus bar in the front junction box and connect 23-26 volts DC power.
    b. Ground the power supply to the ground stud in the front junction box, if the vehicle batteries are not used for the 24 volt power.
    c. Measure for a minimum of 23 volts on stud 14 and stud 93 from the front left front exterior junction box bus bar.
    e. Locate the 12 volt battery bus bar in the front left hand junction box and Remove tie-wraps as necessary to allow connections.
    d. Supply 12 volt power to the bus bar. If the vehicle 12 volt battery is not used for the power supply, ground the power supply to the ground stud in the front junction box and to the vehicle frame.
    e. Actuate the bulb test switch in the drivers switch panel and record which bulbs in the left hand indicator panel are actuated.
    f. Remove the power supply connections to the 24 volt and 12 volt bus bar in the left hand front junction box.

8. To check for continuity between the rear and front junction box for the speed signal, conduct the following:
    a. Locate the rear junction box located on the left hand side of the vehicle behind the tag axle. In the rear junction box, locate stud 27 and remove the wire going to the front junction box. Remove tie-wraps as necessary to allow connections.
    b. In the left hand front junction box, locate stud 97 and remove the wire coming from the rear junction box. Remove tie-wraps as necessary to allow connections.
    c. Record the wire number on the wire found between stud 27 and 97.
    d. Using an approximate 40 foot length of wire and an ohm meter connected in series, connect the two ends of the wires disconnected from the front and rear junction box through the ohm meter and check continuity. Record any resistance found.
    e. Reinstall the wire connections on stud 27 and stud 97 in the rear and front junction box to their original condition.

9. To check the road speed generator:
    a. Locate the road speed generator used for the speed switch signal for the tag steering system and record if the original speed sensing system on the differential is used or if the signal is from the tail shaft of the transmission. If the road speed signal is from the tail shaft of the transmission, it is located on the right hand side next to the output shaft when facing the rear of the transmission.
    b. Check the continuity of the wiring from the road speed generator to the rear junction box by disconnecting the road speed generator connector going

to the rear junction box and disconnecting this wire from stud 27 and from stud D. Check if the road speed signal is connected to stud 57 in the rear junction box. If the road speed generator wiring does not go to these two studs, determine if possible how the road speed signal was provided to the engine ECM plug J1A, terminals E2 and E3 and to the front junction box. Record the wiring on the vehicle if different than the wiring schematic.

c. Using an ohm meter, measure and record the wire resistance of the wiring between the road speed generator and the ECM and rear junction box connection as found in the previous step.

d. Remove the road speed generator from the tail shaft of the transmission to determine if a mechanical failure occurred. This may require removal of the tail shaft assembly.

e. Reconnect the road speed generator connector and the wiring removed from stud 27 in the rear junction box.

f. If a mechanical failure is not found, have the road speed generator checked to determine if it had failed.

10. Provide 23-26 VDC power to the 24 volt bus bar in the front junction box if disconnected. Ground the power supply to the ground stud in the front junction box if the vehicle batteries are not used for the 24 volt power.

11. To check the circuit to the tag axle lock:

a. Apply shop air to the vehicle at a minimum pressure of 90 psi.

b. Disconnect the wiring to stud 41 in the front junction box and isolate wire terminals. Remove tie-wraps as necessary to allow connections.

c. Move the tag lock switch in the instrument panel to the “off” position if found in the “on” position.

d. Document if the tag lock and/or tag steering tell tale and buzzer in the driver’s instrument panel are actuated.

e. Document and photograph the position of the tag axle locking mechanism.

f. Measure and record voltage of the normally closed (NC) output of the speed switch located in the front junction box.

g. Document if the reed switch LED on the tag axle lock switch is activated. Photograph the PL and PR connector adjacent to the rear junction box. If the reed switch LED on the tag axle lock switch is not activated, measure and document the voltage on terminal 5, connector P-L, for the tag axle lock which will require removal of the heat shrink over the P-L connector and wires to allow access to the connector pins on the back side of the connectors.

h. Document and photograph if the latching mechanism air cylinder is retracted or extended.

i. Document if the reed switch LED on full forward latching mechanism air cylinder is activated. If not, measure the voltage on terminal 5, connector P-R for the latching mechanism air cylinder by probing the connector, which will require removal of the heat shrink over the PL connector and

the wires to allow access to the connector pins on the back side of the connectors.

12. To check if the circuit to the tag axle caster steer is operational:
    a. Reconnect wire 815T-WH on stud 41 and ground stud 41 to the ground stud in the front junction box using a jumper wire.
    b. Document if the tag axle steering telltale in the instrument panel and if the buzzer activates when the ground is connected to stud 41.
    c. Document and photograph if the latching mechanism air cylinder is retracted or extended.
        i. Document if the full reverse switch LED on the latching cylinder mechanism is actuated. If not, measure the voltage on terminal 5, connector P-R for the latching mechanism air cylinder by probing the rear of the connector.
    d. Remove the ground from stud 41.

13. To check the operation of the speed switch:
    a. Connect the pulse width modulator signal to terminal 97 in the front junction box and the signal ground to the speed switch signal ground connection. Remove tie-wraps as necessary to allow connections
    b. Check and record the voltage on the common terminal and the + terminal on the speed switch. Check and record if the ground terminal on the speed switch is grounded.
    c. Measure and record the voltage on the common, the NO and NC connection of the speed switch.
    d. The vehicle presently has Michelin XZA 315/8022.5 tires installed. According to the Michelin data sheet, this tire has 492 rev/mi.
    e. Slowly adjust the pulse width modulator starting at an equivalent speed of 15 MPH (which correlates to 100.7 HZ) to 235 HZ (which correlates to 35 MPH) while measuring the output voltage of the NO connection of the speed switch. Record the frequency when the NO connection on the speed switch is a minimum of 23 volts or if this occurs before 235 HZ is reached on the pulse width modulator output.
    f. Document and photograph if the latching system mechanism is retracted or extended.
    g. Document if the tag lock and/or tag steering tell tale and buzzer in the drivers instrument panel are actuated. Photograph the left hand tell tale panel.
    h. Document and photograph the position of the locking mechanism air cylinder. Document if the full lock switch LED on the locking cylinder is actuated. If not, measure the voltage on terminal 3, connector P-L, for the locking air cylinder by probing the connector the back side of the connector using a DC volt meter and record the voltage.

14. Disconnect the pulse width modulator and the power supply. Reinstall the wiring to terminal 41 to its original condition.

15. Remove the tag axle shocks and record the extended length of the shocks, the manufacturer and the manufacturer's part number.

16. Check the engine ECM for any speed signal failure fault codes and check engine lights.

PE12-007

MCI

4-27-2012

Response 9

Full Vehicle Testing-Tag Axle Steering Analysis

Full Vehicle Testing And Tag Axle Steering Analysis



1995 MCI 102DL3

June 12 – 14, 2011

ALL-STATE LEGAL®
EXHIBIT
34

∂AG
Dynamic Analysis Group LLC
1440 Lake Front Circle, Suite 130, The Woodlands, Texas 77380

∂AG

Test Vehicle:	Configuration	1
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Test Vehicle: *Configuration* *1*

Test Vehicle Specifications

Model Year:	1995	
Manufacturer:	MCI	
Model:	102DL3	
VIN:	1M8PDMPA5SP047805	
Date of Manufacture:	August 1995	
Vehicle Type:	Bus	
Color:	White	
Seating Capacity:	55 passengers	
Mileage:	626,384 indicated	
Engine:	Detroit Diesel Series 60	
Transmission:	Allison	
GVWR:	44,400	(lbs)
Front GAWR:	14,400	(lbs)
Intermediate GAWR:	22,500	(lbs)
Rear GAWR:	12,000	(lbs)
Front Tires:	Firestone FS 400	
Tire Size:	315/80R22.5 Load Range J	
Tire Pressures:	115/95/95	(psi)
Rim Size:	8.25 x 22.5	
Wheelbase:	342	(in)
Front Axle to Intermediate Axle:	318	(in)
Intermediate Axle to Rear Axle:	48	(in)
Front Track Width:	85.6	(in)
Intermediate Track Width:	76.6	(in)
Rear Track Width:	85.6	(in)
Roof Height:	136.9	(in)
Overall Width:	102	(in)
Overall Length:	541.9	(in)

VIN number: 1M8PDMPA5SP047805

DECODED: MCI - 102DL3 Intercity (1995)

Model Year	1995
Make	MCI
Model	102DL3 Intercity
Series	MCI Series
Body Type	Intercity Coach
Manufacturer	Motor Coach Industries Inc.
Production Seq. Number	047805
Engine Type	L6, 12.7L (775 CID)
Engine Manufacturer	Detroit Diesel
Fuel Type	Diesel
Horsepower	370-450HP
Engine Code	P
Engine Series Code	Series 60
Vehicle Type	Bus
Vehicle Class	Intercity/Tour Bus
Brake System	Air
Country	UNITED STATES
Assy. Plant	Pembina, ND
Check Digit	5

Scroll down for more content when viewing on computer monitor.

Report type:
BASIC

VIN: 1M8PDMPA5SP047805

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GENERAL DATA

The data below includes only general information on coach models covered by this manual.

MODEL DATA

VEHICLE LENGTH – MAXIMUM ..... 45.16 ft. in.
13.767 m

VEHICLE HEIGHT – MAXIMUM (TO TOP OF ROOF HATCH) ..... 136.92 in.
3477.8 mm

VEHICLE WIDTH ..... 102 in.
2590.8 mm

TURNING RADIUS AT FRONT BUMPER
(RH Turn) ..... 50 ft. 5 in. (15.37 m)
(LH Turn) ..... 50 ft. 5 in. (15.37 m)

WHEELBASE – CENTER OF FRONT AXLE TO CENTER OF DRIVE AXLE ..... 318 in.
8077.2 mm

TRACK, FRONT ..... 85.6 in.
2174 mm

TRACK, REAR - AT CENTER OF DUAL WHEELS ..... 76.6 in.
1946 mm

TRACK, REAR TRAILING AXLE ..... 85.6 in.
2174 mm

VEHICLE NET WEIGHT ..... 27,250 lbs.
12358.3 kg

GROSS VEHICLE WEIGHT ..... 44,400 lbs.
20,139.8 kg

FUEL TANK CAPACITY
Standard, (approx) ..... 192 Gal. U.S.
726.7 liters

COOLING SYSTEM CAPACITY ..... 32.5 Gal. U.S.
123 liters

ENGINE CRANKCASE CAPACITY (SAE-30 OR 40 Engine Oil) ..... 28 qts.
26.5 liters

AUTOMATIC TRANSMISSION CAPACITY
Dexron Transmission Oil ..... 8.25 Gal. U.S.
31.2 liters
(Does not include external circuits.)

STANDARD TRANSMISSION CAPACITY
SAE 30 OR 40 Engine Oil ..... 22 pts. U.S.
10.4 liters

STEERING SYSTEM CAPACITY
SAE 10W-40 MS OR DS Service ..... 7.5 qts.
7.1 liters

REAR AXLE CAPACITY ..... 28 qts.*
26.5 liters*

* 1992 Production - identify axle model by data plate on housing (Model 61143).

ENGINE DATA

Model	**8V-92TA**
Type	2 Cycle
No. of Cylinders	8
Bore (Inches)	4.84
Bore (mm)	123
Stroke (Inches)	5
Stroke (mm)	127
Compression Ratio (Turbo)	17:1
Compression Ratio (NA)	– – –
Total Displacement (Cubic Inches)	736
Total Displacement (Liters)	12.07
No. of Main Bearings	5

Printed in U.S.A.

Vehicle Photographs 2

1995 MCI 102DL3 Vehicle Testing

Test Vehicle

1995 MCI 102DL3

VIN: 1M8PDMPA5SP047805

June 12-14, 2011

∂AG DYNAMIC ANALYSIS GROUP LLC

MCI 102DL3.png



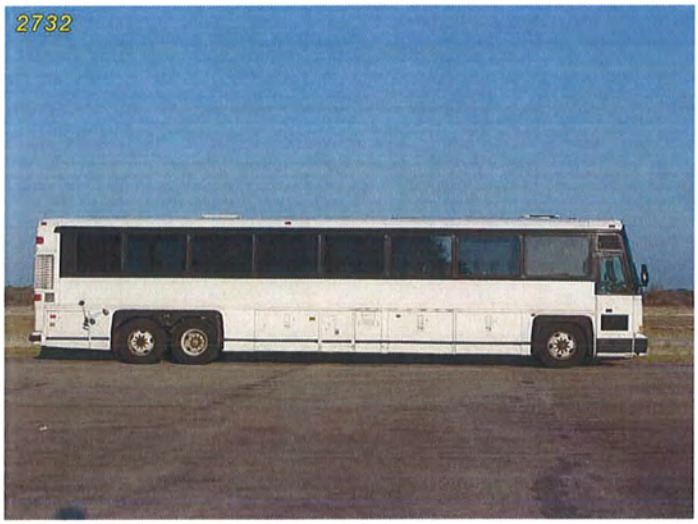
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MCI 102DL3_2730.jpg



MCI 102DL3_2731.jpg



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MCI 102DL3_2733.jpg

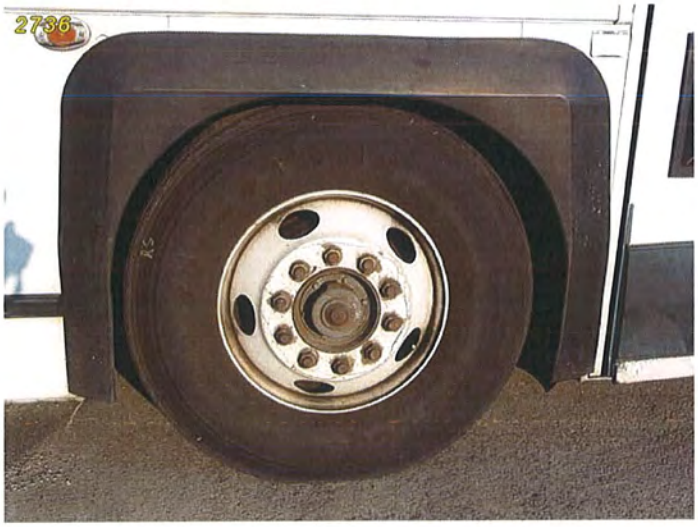
1995 MCI 102DL3 Vehicle Testing



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MCI 102DL3_2737.jpg



MCI 102DL3_2738.jpg



MCI 102DL3_2739.jpg

1995 MCI 102DL3 Vehicle Testing



MCI 102DL3_2740.jpg



MCI 102DL3_2741.jpg



MCI 102DL3_2742.jpg



MCI 102DL3_2743.jpg



MCI 102DL3_2744.jpg



MCI 102DL3_2745.jpg

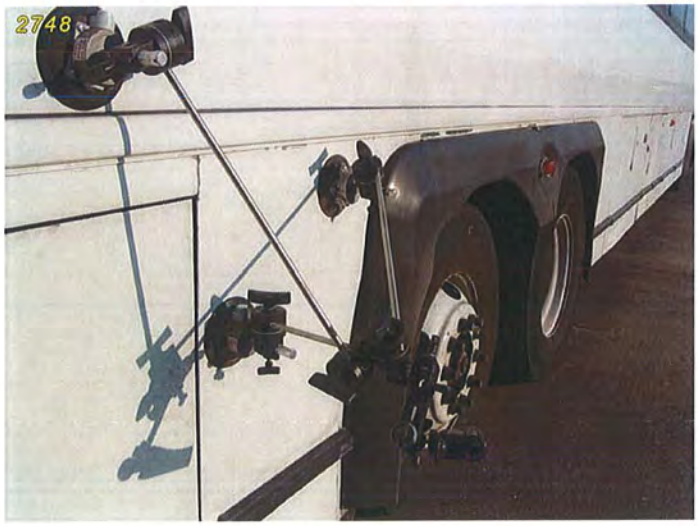
1995 MCI 102DL3 Vehicle Testing



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MCI 102DL3_2749.jpg



MCI 102DL3_2750.jpg



MCI 102DL3_2751.jpg

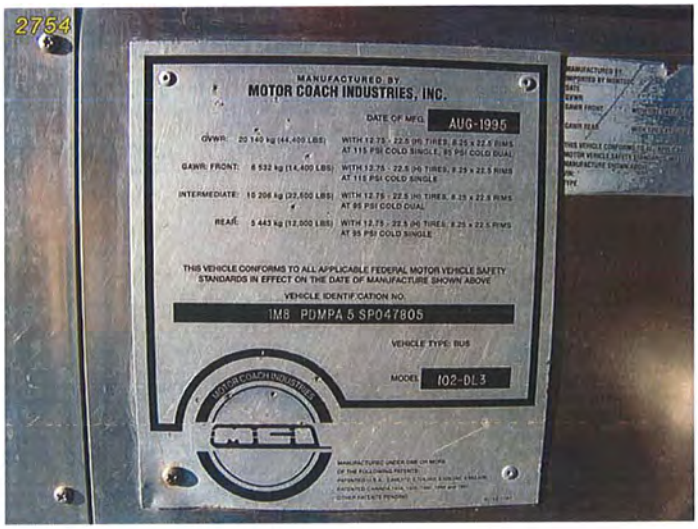
1995 MCI 102DL3 Vehicle Testing



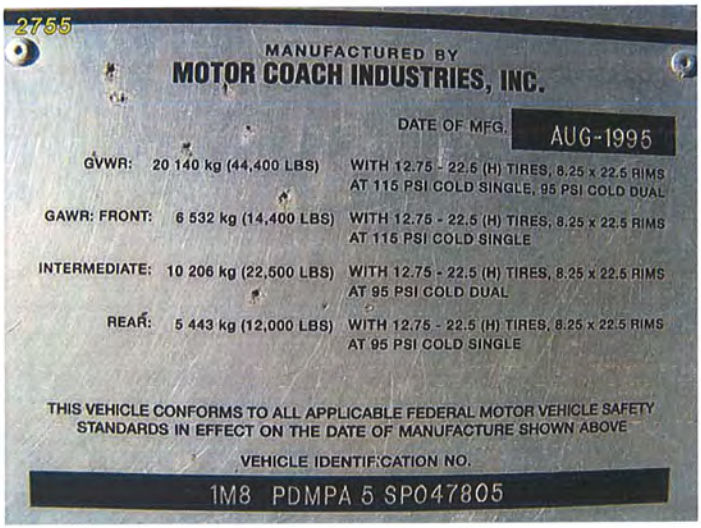
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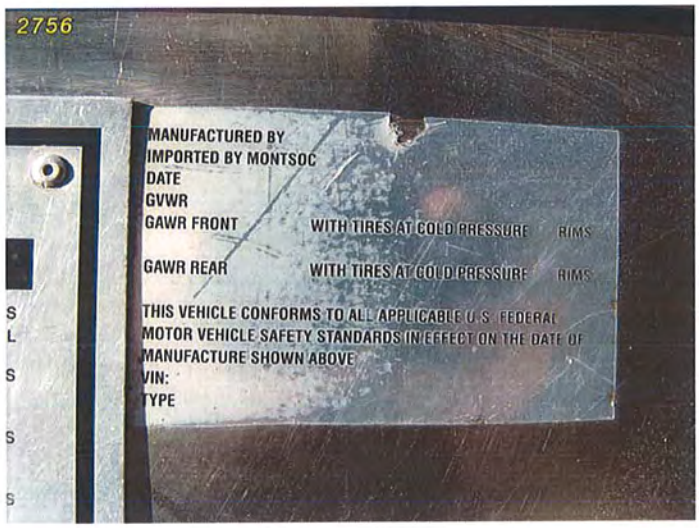
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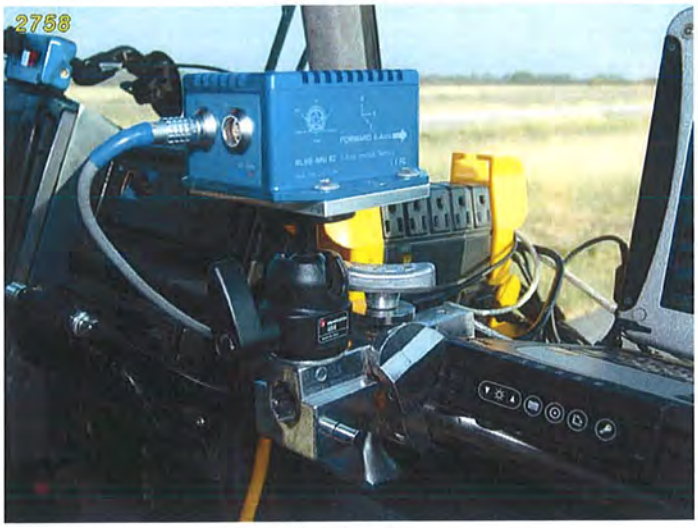


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MCI 102DL3_2757.jpg

1995 MCI 102DL3 Vehicle Testing



MCI 102DL3_2758.jpg



MCI 102DL3_2759.jpg



MCI 102DL3_2760.jpg



MCI 102DL3_2761.jpg



MCI 102DL3_2762.jpg



MCI 102DL3_2763.jpg

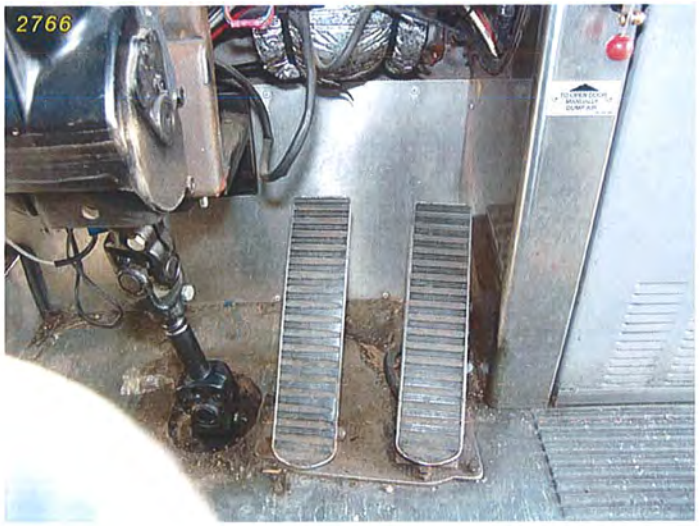
1995 MCI 102DL3 Vehicle Testing



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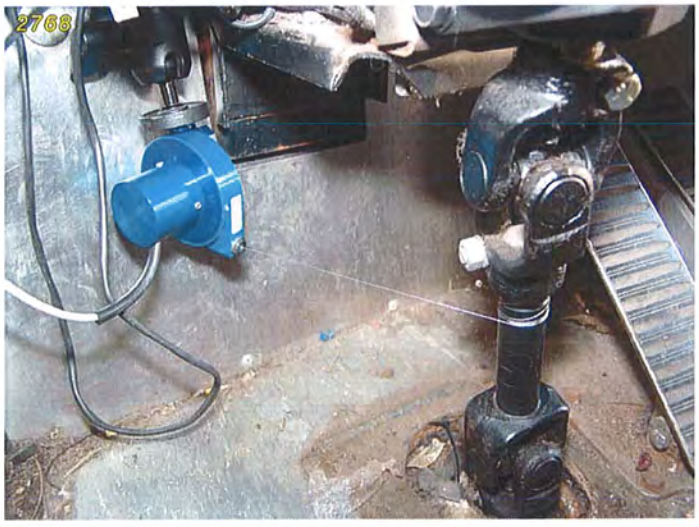
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MCI 102DL3_2766.jpg



MCI 102DL3_2767.jpg



MCI 102DL3_2768.jpg



MCI 102DL3_2769.jpg

1995 MCI 102DL3 Vehicle Testing



MCI 102DL3_2770.jpg



MCI 102DL3_2771.jpg



MCI 102DL3_2772.jpg



MCI 102DL3_2773.jpg



MCI 102DL3_2774.jpg



MCI 102DL3_2775.jpg

1995 MCI 102DL3 Vehicle Testing



MCI 102DL3_2776.jpg



MCI 102DL3_2777.jpg



MCI 102DL3_2778.jpg



MCI 102DL3_2779.jpg



MCI 102DL3_2780.jpg



MCI 102DL3_2781.jpg

1995 MCI 102DL3 Vehicle Testing



MCI 102DL3_2782.jpg



MCI 102DL3_2783.jpg



MCI 102DL3_2784.jpg



MCI 102DL3_2785.jpg



MCI 102DL3_2786.jpg



MCI 102DL3_2787.jpg

1995 MCI 102DL3 Vehicle Testing



MCI 102DL3_2788.jpg



MCI 102DL3_2789.jpg



MCI 102DL3_2790.jpg



MCI 102DL3_2791.jpg



MCI 102DL3_2792.jpg



MCI 102DL3_2793.jpg

1995 MCI 102DL3 Vehicle Testing



MCI 102DL3_2794.jpg



MCI 102DL3_2795.jpg



MCI 102DL3_2796.jpg



MCI 102DL3_2797.jpg



MCI 102DL3_2798.jpg



MCI 102DL3_2799.jpg

1995 MCI 102DL3 Vehicle Testing



MCI 102DL3_2800.jpg



MCI 102DL3_2801.jpg



MCI 102DL3_2802.jpg



MCI 102DL3_2803.jpg



MCI 102DL3_2804.jpg



MCI 102DL3_2805.jpg

1995 MCI 102DL3 Vehicle Testing



MCI 102DL3_2806.jpg



MCI 102DL3_2807.jpg



MCI 102DL3_2808.jpg



MCI 102DL3_2809.jpg



MCI 102DL3_2810.jpg



MCI 102DL3_2811.jpg

1995 MCI 102DL3 Vehicle Testing



MCI 102DL3_2812.jpg



MCI 102DL3_2813.jpg



MCI 102DL3_2814.jpg



MCI 102DL3_2815.jpg



MCI 102DL3_2816.jpg



MCI 102DL3_2817.jpg

1995 MCI 102DL3 Vehicle Testing



MCI 102DL3_2818.jpg



MCI 102DL3_2819.jpg



MCI 102DL3_2820.jpg



MCI 102DL3_2821.jpg



MCI 102DL3_2822.jpg



MCI 102DL3_2823.jpg

1995 MCI 102DL3 Vehicle Testing



MCI 102DL3_2824.jpg



MCI 102DL3_2825.jpg



MCI 102DL3_2826.jpg



MCI 102DL3_2827.jpg



MCI 102DL3_2828.jpg



MCI 102DL3_2829.jpg

1995 MCI 102DL3 Vehicle Testing



MCI 102DL3_2830.jpg



MCI 102DL3_2831.jpg



MCI 102DL3_2832.jpg



MCI 102DL3_2833.jpg



MCI 102DL3_2834.jpg



MCI 102DL3_2835.jpg

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MCI 102DL3_2836.jpg



MCI 102DL3_2837.jpg



MCI 102DL3_2838.jpg



MCI 102DL3_2839.jpg



MCI 102DL3_2840.jpg



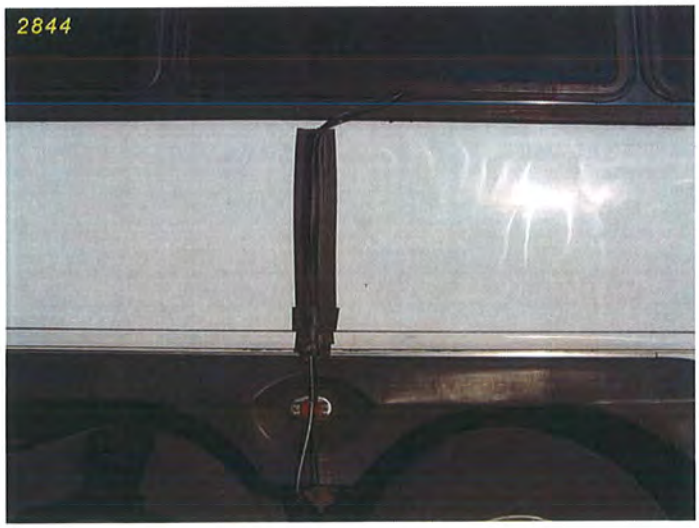
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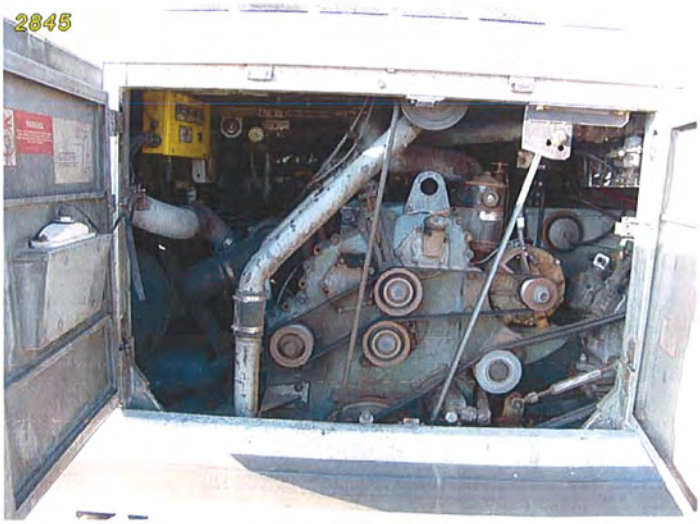
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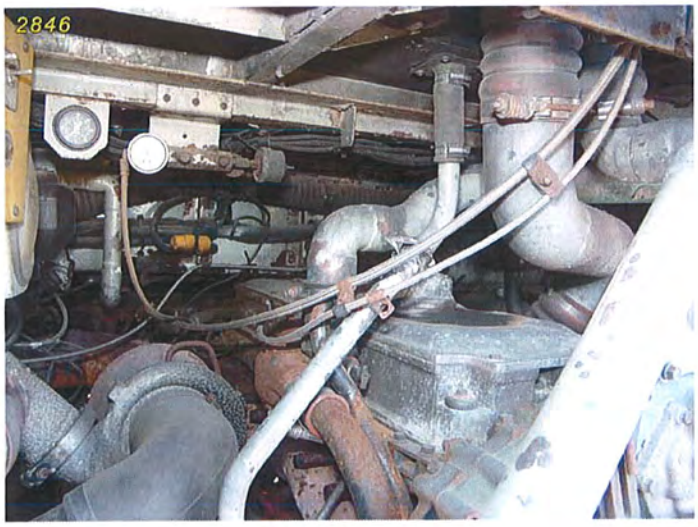
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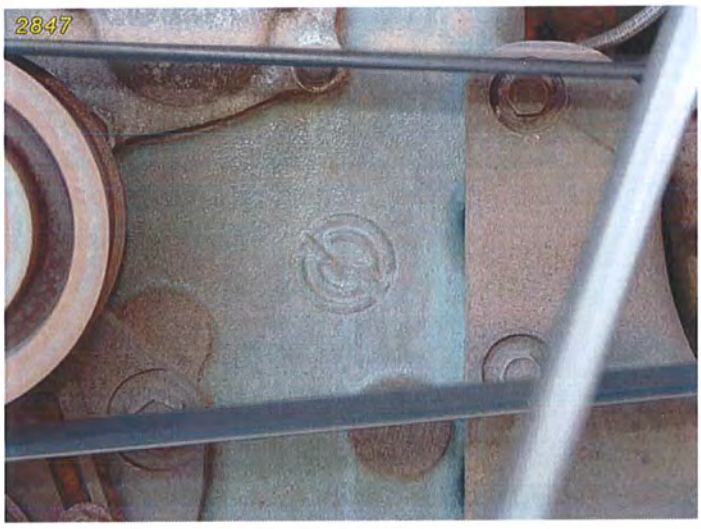
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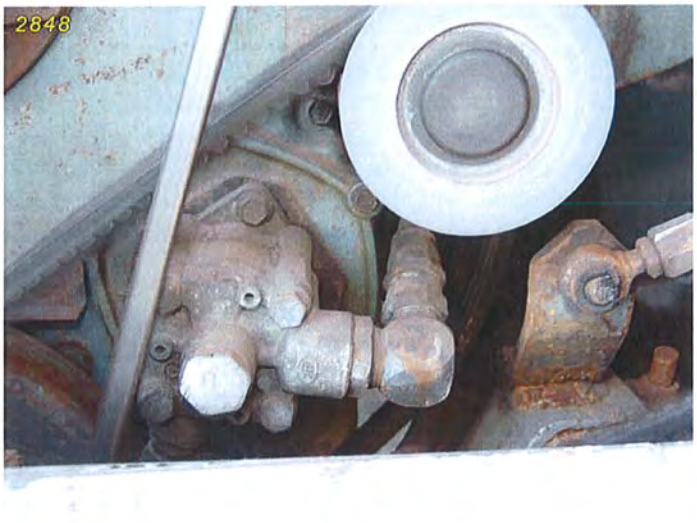
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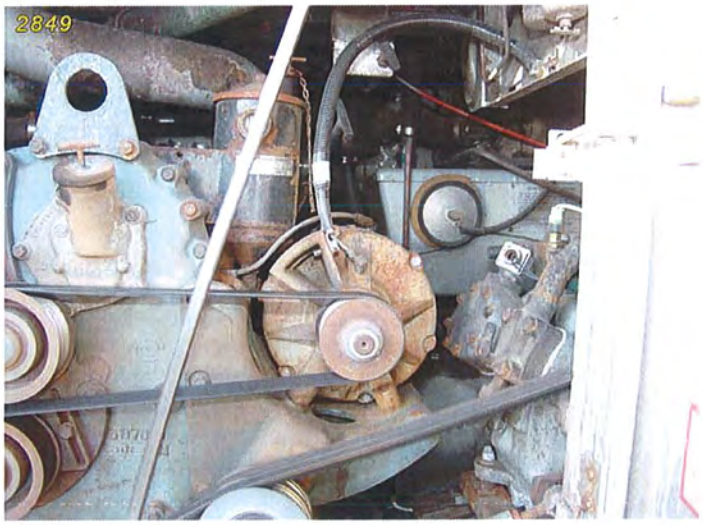
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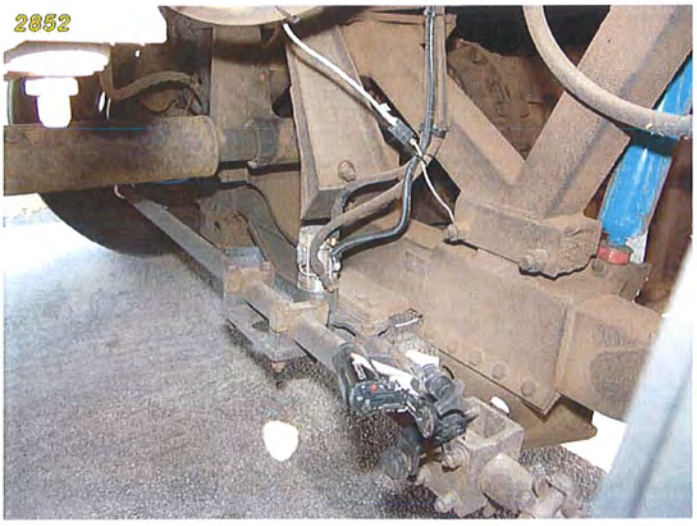
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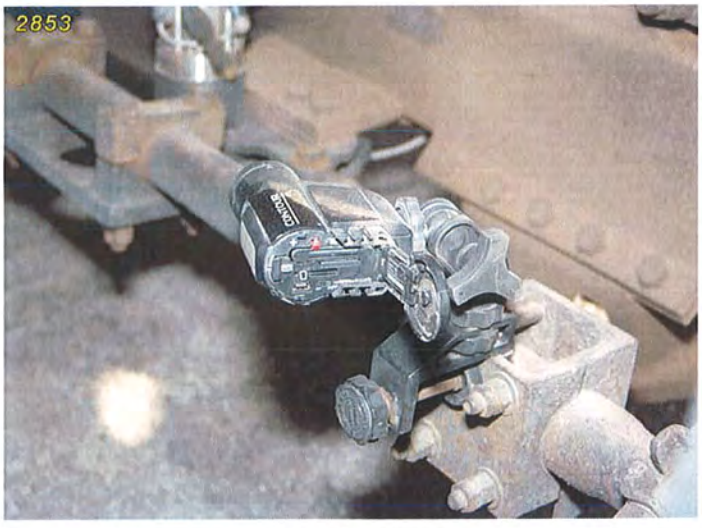
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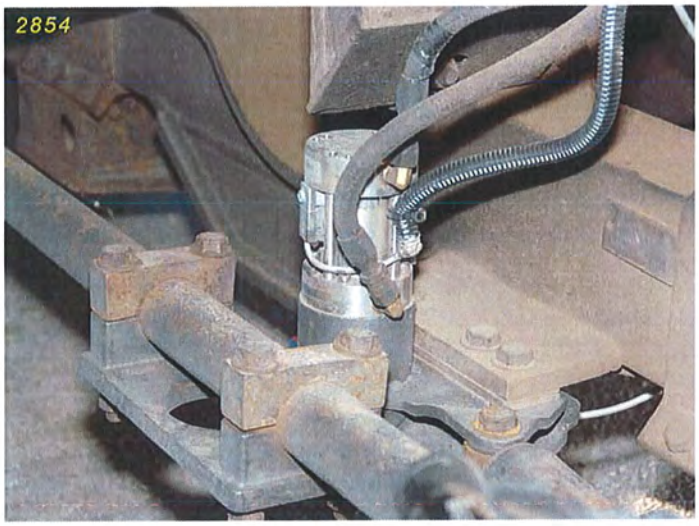


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MCI 102DL3_2853.jpg

1995 MCI 102DL3 Vehicle Testing



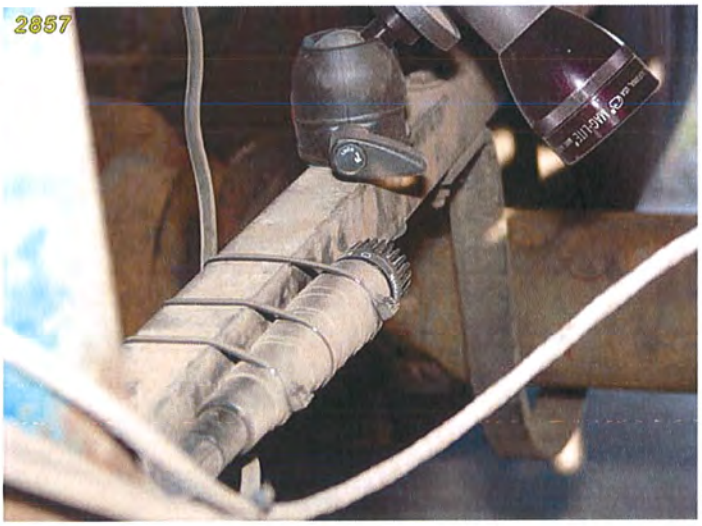
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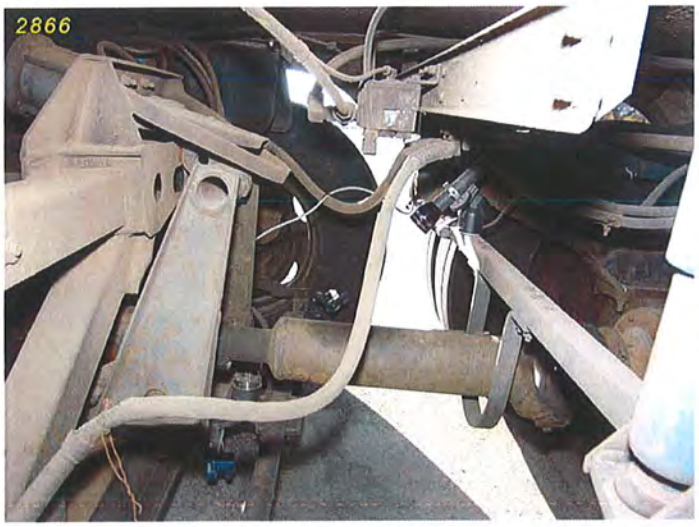


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1995 MCI 102DL3 Vehicle Testing



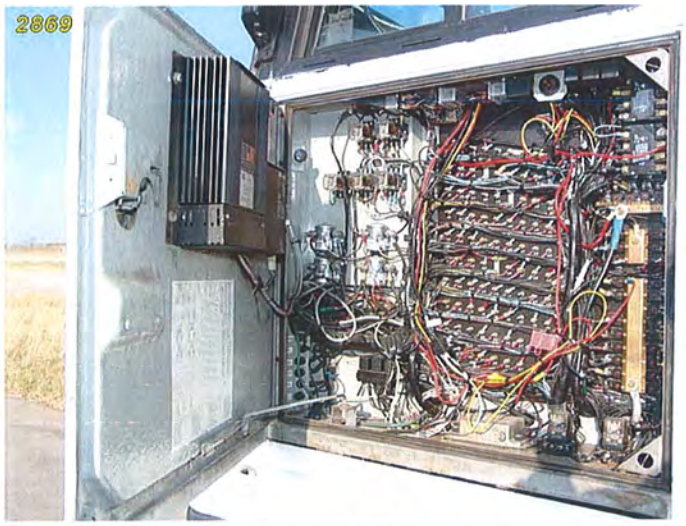
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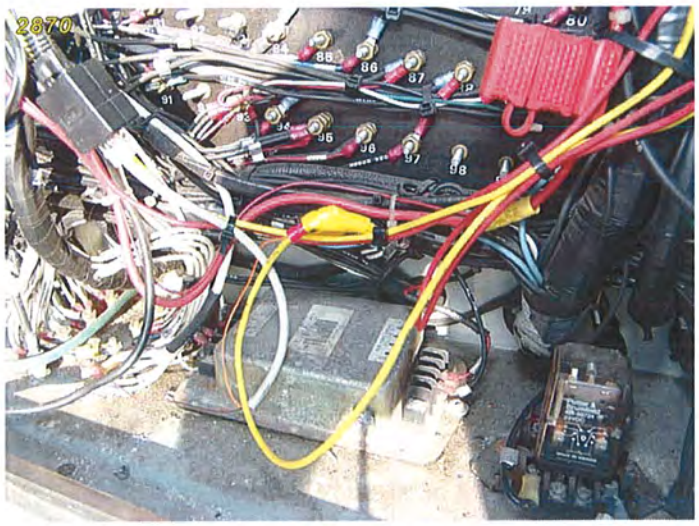
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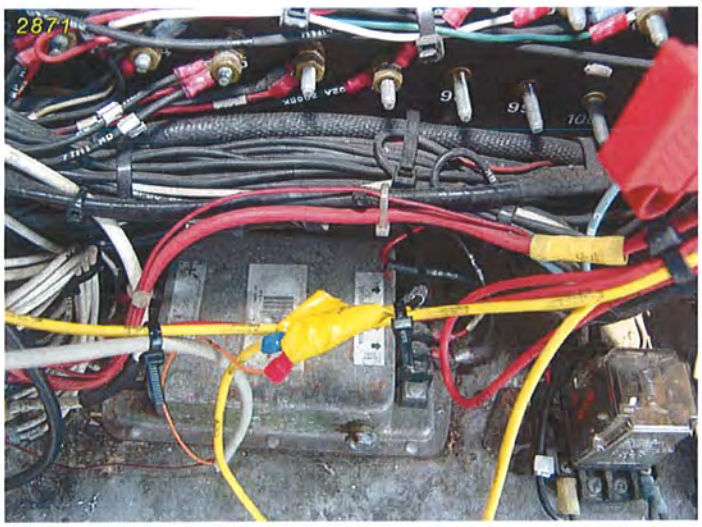
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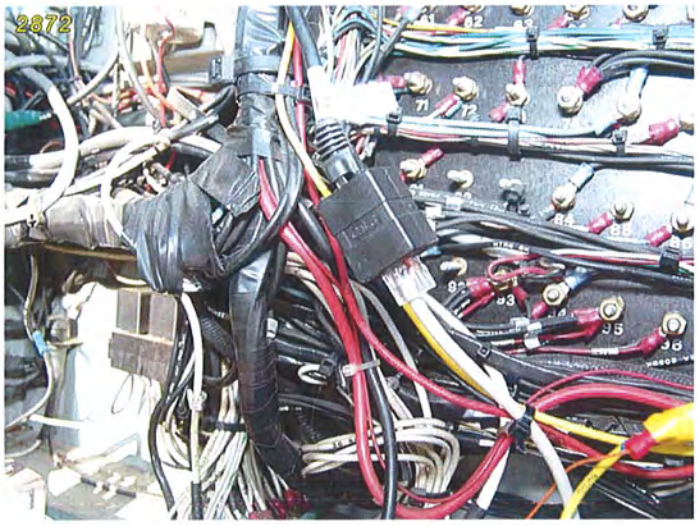


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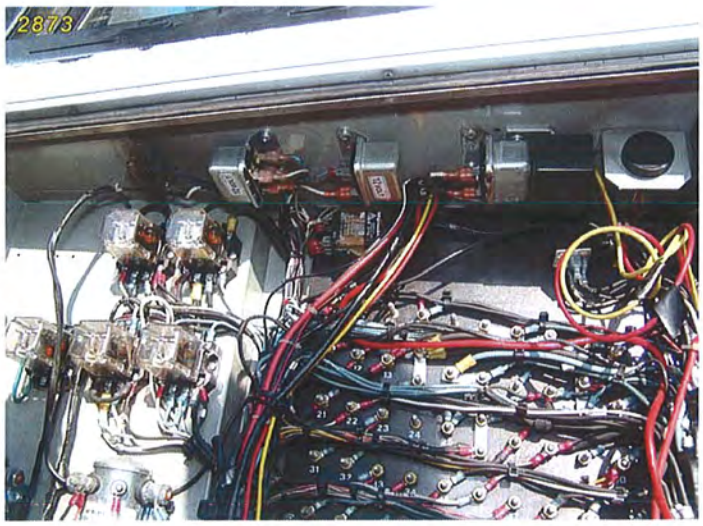


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1995 MCI 102DL3 Vehicle Testing



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MCI 102DL3_2875.jpg



MCI 102DL3_2876.jpg



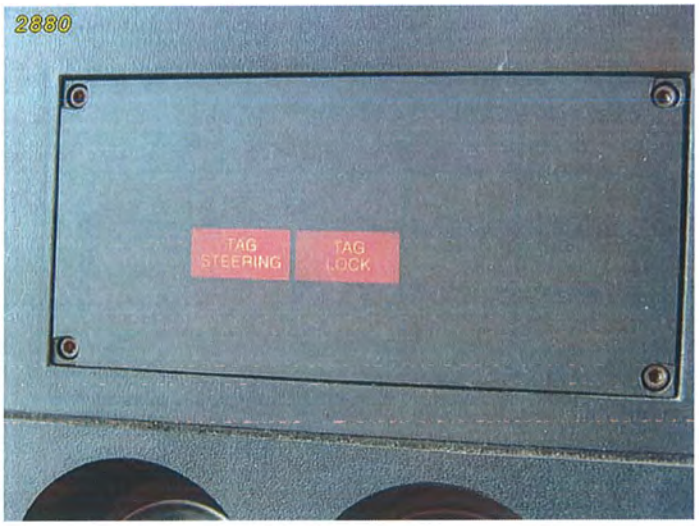
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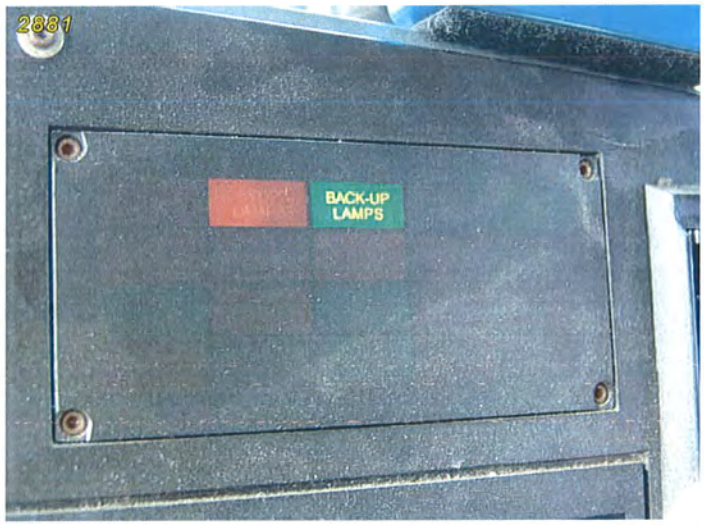
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MCI 102DL3_2879.jpg



MCI 102DL3_2880.jpg



MCI 102DL3_2881.jpg

Weights 3

Test Weights

Vehicle:	1995 MCI 102DL3	VIN:	1M8PDMPA5SP047805
Tires:	Firestone FS 400	Size:	315/80R22.5 Load Range J

Date: June 12, 2011
Loading: Driver, Equipment, 44 Passengers, Cargo, Tire & Wheel, Full Fuel
Description 50-lb nominal sand bags, 3 sandbags each of 44 passenger seating postions
Additional sandbags as ballast in baggage compartments calculated equivalent to 35 lbs per passenger

	Left	Right	Total	Percent	Rating
Front	6427	6851	13278	29.6%	14400
Intermediate	10811	10376	21187	47.2%	22500
Rear	5009	5396	10405	23.2%	12000
Total	22247	22623	44870	100.0%	44400
	49.6%	50.4%			

Date: June 16, 2011
Loading: Curb Load
Description Full Fuel, Tire & Wheel

	Left	Right	Total	Percent	Rating
Front	4609	5059	9668	27.5%	14400
Intermediate	8212	8781	16993	48.3%	22500
Rear	4487	3999	8486	24.1%	12000
Total	17308	17839	35147	100.0%	44400
	49.2%	50.8%			

Calculation of Actual Sandbag Weight

Total Cargo Loading:	9723 lbs
Driver & Equipment:	320 lbs
Total Sandbag Ballast:	9403 lbs
Actual Sandbags in Seats:	132
Actual Sandbags in Cargo:	32
Total Actual Sandbags:	164
Calculated Weight per Sandba	57.3 lbs

Instrumentation 4

Vehicle: 1995 MCI 102DL3
Tires: Firestone FS 400

VIN: 1M8PDMPA5SP047805
Size: 315/80R22.5 Load Range J

Test Instrumentation Log

	Instrumentation	Manufacturer	Model
1	Speed and Displacement GPS-based speed sensor and data logger	RaceLogic	VBox3
2	Inertial Transducer, 6-Degrees of Freedom Rotational Rates and Translational Accelerations	RaceLogic	RLVBIMU02
3	Steering Wheel Angle Linear Displacement Potentiometer	FirstMark Controls	162-3405-C8SU
4	Tag Axle Tie Rod Displacement Linear Displacement Potentiometer	FirstMark Controls	162-3405-C8SU

CERTIFICATE OF CALIBRATION

RACELOGIC

Customer	Dynamic Analysis Group	Equipment	GPS Data-logger
Location	VBOX USA	Model	VBOX3
Customer ID #	NA	Serial number	0030901
In tolerance as received (Y/N)	Y	Calibration date	4/14/2011
Certificate No.	8040	Calibration due	4/13/2012
Temperature	24.1C	Engineer	Mark Kibble
Humidity	30%		

Calibration Procedure

The unit under test was subjected to the standard production test procedure. This procedure covers measured velocity by the VBOX over a simulated test course. Simulation data is provided via a calibrated LabSat GPS simulator. Analogue output voltage and digital output frequency are checked for calibration against simulated speed. Voltage output range is configured to 5 volts at 100km/h. Frequency output is configured to 25Hz per Km/h. VBOX indicated values are taken from the serial output of the VBOX.

Equipment used

	Equipment	Serial number	CAL Cert No.	CAL due
Simulation of GPS	LabSat	009922	HC102704001	9/1/2011
Analogue Voltage	LabSat	009922	HC102704001	9/1/2011
Frequency	LabSat	009922	HC102704001	9/1/2011

Results

Accuracy of analogue and digital output signals

Applied Speed	Analogue Output 1			Analogue Output 2		
	Expected	As received	As returned	Expected	As received	As returned
30 Km/h	1.500 V +/- 5.0mV	1.502 V	1.502 V	1.500 V +/- 5.0mV	1.502 V	1.502 V
60 Km/h	3.000 V +/- 5.0mV	3.002 V	3.002 V	3.000 V +/- 5.0mV	3.001 V	3.001 V
100 Km/h	5.000 V +/- 5.0mV	5.000 V	5.000 V	5.000 V +/- 5.0mV	5.000 V	5.000 V

Applied Speed	Frequency Output 1		
	Expected	As received	As returned
30 Km/h	750 Hz +/-2.5Hz	749.5 Hz	749.5 Hz
60 Km/h	1500 Hz +/-2.5Hz	1499.8 Hz	1499.8 Hz
100 Km/h	2500 Hz +/-2.5Hz	2500.3 Hz	2500.3 Hz

Simulation of constant speed by LabSat

Applied simulated value	VBOX indicated speed		
	Criteria	As received	As returned
30 Km/h	+/-0.1 Km/h	29.98	29.98
60 Km/h	+/-0.1 Km/h	60.01	60.01
100 Km/h	+/-0.1 Km/h	100.01	100.01
400 Km/h	+/-0.1 Km/h	400.00	400.00

Simulation of constant heading by LabSat

Applied simulated value	VBOX indicated heading		
	Criteria	As received	As returned
0 deg	+/-0.1deg	0.00deg	0.00deg
90 deg	+/-0.1deg	89.97deg	89.97deg
180 deg	+/-0.1deg	179.96deg	179.96deg
270 deg	+/-0.1deg	269.96deg	269.96deg

Summary

The unit VBOX3 0030901 passed all standard production tests and was found to be fully compliant with the product specification. Racelogic certifies the above instrument meets or exceeds published specifications and has been calibrated using instruments and standards of known accuracies, which are traceable to UKAS United Kingdom Accreditation Service

Calibration Engineer:

Racelogic Ltd. Unit 10 Swan Business Centre, Osier Way, Buckingham MK18 1TB
Tel +44 (0)1280 823803 Fax +44 (0)1280 823595

RACELOGIC VBOX

Certificate of Conformity



Customer Name:	Dynamic Analysis Group	Equipment:	VBOX Inertial Measurement Unit
Location:	U.S.A.	Model:	RLVBIMU02
Issue Date:	24-03-11	Serial Number:	008366

Procedure

RLVBIMU02 modules are tested as detailed in the following document to ensure their accuracy matches that stated on the relevant product data / specification sheets.

Function Tests

Gyros

Gyro calibration is performed in a temperature Chamber on a turntable. Temperature and angular table rate are both microprocessor controlled using temperature feedback from the units under test. Chamber time is as follows:

Product	Chamber Time	Minimum Temperature Range	Maximum Temperature Range	Tolerance of Yaw Rate(s)
YAW03	¾ hour	-10°C	+50°C	±0.5°/s
IMU02	2¼ hours	-10°C	+50°C	±0.5°/s

Accelerometers

Accelerometers are calibrated against gravity. Data is collected in 6 orientations as below:

Step	Acceleration (g)	Tolerance (g)
1	X +1	±0.01
2	X −1	±0.01
3	Y +1	±0.01
4	Y −1	±0.01
5	Z +1	±0.01
6	Z −1	±0.01

All collected data is post-processed to generate unique calibration values for each unit.

Final Tests

Post calibration tests are performed to check null offset and scale.

Racelogic certify that this product matches or betters the specifications stated on the relevant product data sheet.

Signed: _____

For Racelogic Ltd

Head Office: Unit 10, Swan Business Centre, Osier Way, Buckingham, Bucks MK18 1TB, England
Tel: +44 (0)1280 823 803 Fax: +44 (0)1280 823 595 Email: sales@racelogic.co.uk Web: www.racelogic.co.uk

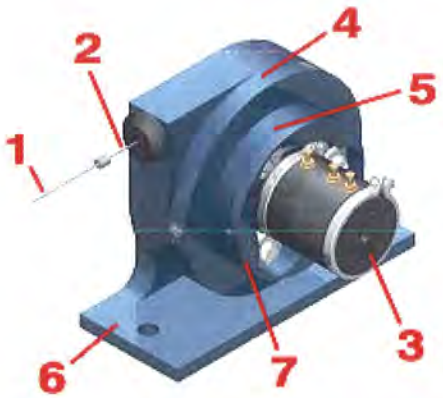
Data Sheet - Series 161H and 162H Miniature Position Transducers with High Cable Tension

Analog-Output Miniature Position Transducers

Shaded characteristics are verified during production and test. All others are for REFERENCE and information only.

Key Features

1. High Cable Tension for Enhanced Frequency Response
2. 42.5-Inch (1080-mm) Maximum Travel (Series 162)
3. Analog Signal Using Precision Conductive Plastic or Hybrid Potentiometers
4. AccuTrak™ Threaded Drum for Enhanced Repeatability
5. Bearing-Mounted Rotating Components
6. Optional Flexible Mounting Bases
7. DirectConnect™ Sensor-To-Drum Technology = Zero Backlash, No Torsion Springs or Clutches



Potentiometer Specifications

	1-turn	3-turn	5-turn
Potentiometer Type	1-turn, precision, conductive plastic	3-turn, precision, hybrid	5-turn, precision, hybrid
Resistance: Value, Tolerance	5K ohms, ±20%	5K ohms, ±5%	5K ohms, ±5%
Travel: Electrical, Mechanical	340°, 360°	1080°, 1080° +10° -0°	1800°, 1800° +10° -0°
Mechanical Life	10 million shaft revolutions min	5 million shaft revolutions min	5 million shaft revolutions min
Output Signal	analog signal from 0 to supply voltage (voltage divider circuit)		
Power Rating	1.0 W at 158° F (70° C)	1.5 W at 158° F (70° C)	2.0 W at 158° F (70° C)
Supply Current	12 mA max		
Supply Voltage	35 VDC max (using voltage divider circuit)		
Independent Linearity Error	±1.0% max per VRCI-P-100A	±0.5% max per VRCI-P-100A	±0.35% max per VRCI-P-100A
Output Smoothness	< 0.1% max	0.5% max	0.35% max
Insulation Resistance	100 Mohms at 1000 VDC min	1000 Mohms at 500 VDC min	1000 Mohms at 500 VDC min
Dielectric Strength	1000 VDC min	1000 VDC min	1000 VDC min

Resolution	infinite signal	infinite signal	infinite signal
Operating Temperature	-40° to 257° F (-40° to 125° C)	-67° to 257° F (-55° to 125° C)	-67° to 257° F (-55° to 125° C)
Electrical Connection	3-terminal (1, 2, 3)	3-terminal (CW,CCW,S)	3-terminal (CW,CCW,S)
Shock	50 g for 11 ms	100 g for 6 ms	100 g for 6 ms
Vibration	10 to 2000 Hz at 15 g	10 to 2000 Hz at 15 g	10 to 2000 Hz at 15 g
Temperature Coefficient	±400 ppm/°C max	±0.007%/°C max	±0.007%/°C max

The potentiometer type of a specific position transducer part number is designated by the 8th digit of the part number counting left to right. Example: 161-0361H-AND contains a 1-turn potentiometer while 162-3405H-BSD contains a 5-turn potentiometer.

Other Specifications

Case/Drum Materials	precision-machined anodized 2024 aluminum			
Displacement Cable	0.027-inch (0.69-mm) dia., 7-by-7 stranded stainless steel, 90-lb (400-N) min breaking strength			
Displacement Cable Hardware	1 each of 300196 loop sleeve, 300292 copper sleeve, 160032 copper sleeve, 300688 ball-end plug, 300495 pull ring, and 301003 nickel swivel; all items provided uncrimped			
Electrical Connections	three solder terminals; electrical cable and connector options available			
Nominal Mass	Series 161H		Series 162H	
	7 oz	198 g	10 oz	284 g
Environmental Protection	NEMA 4 / IP 56, DO-160D (ED-14D) Env. Cat. E1E1ABXHRFDFSAXXXXXXXXXX (with optional sensor cover)			

Model Numbers and Ordering Codes

Model	Range		Nominal Displacement Cable Tension Range (Full Extraction to Full Retraction)			
	inches	mm	Opt A: -090 spring		Opt B: -100 spring	
			oz.	N	oz.	N
161-0361H	4.50	114	**65 to 95**	**18 to 26**	79 to 170	22 to 47
161-0461H	5.75	146	**65 to 95**	**18 to 26**	70 to 150	19 to 42
161-1143H	14.25	362	**75 to 180**	**21 to 50**	75 to 300	21 to 83
161-1283H	16.00	406	**50 to 130**	**14 to 36**	75 to 200	21 to 56
161-1443H	18.00	457	**35 to 150**	**10 to 42**	70 to 130	19 to 36
161-1915H	23.88	606	**45 to 215**	**13 to 60**	50 to 245	14 to 68
161-2145H	26.75	679	**40 to 190**	**11 to 53**	65 to 240	18 to 67
161-2405H	30.00	762	**30 to 160**	**8 to 44**	50 to 260	14 to 72
162-0521H	6.50	165	**55 to 85**	**15 to 24**	105 to 135	29 to 38
162-0651H	8.13	206	**75 to 120**	**21 to 33**	105 to 135	29 to 38
162-2735H	34.13	867	**40 to 140**	**11 to 39**	75 to 160	8 to 44
162-2945H	36.75	933	**56 to 130**	**16 to 36**	75 to 160	8 to 44
162-3205H	40.00	1016	**25 to 120**	**7 to 33**	35 to 175	10 to 49
162-3405H	42.50	1080	**10 to 105**	**3 to 29**	30 to 145	8 to 40

Bolded entries are standard cable tension.

Order Codes

16_-_ _ _ _ H-abc (example: 161-0361H-BSB (cable tension: -100, sensor cover, and base: big foot))

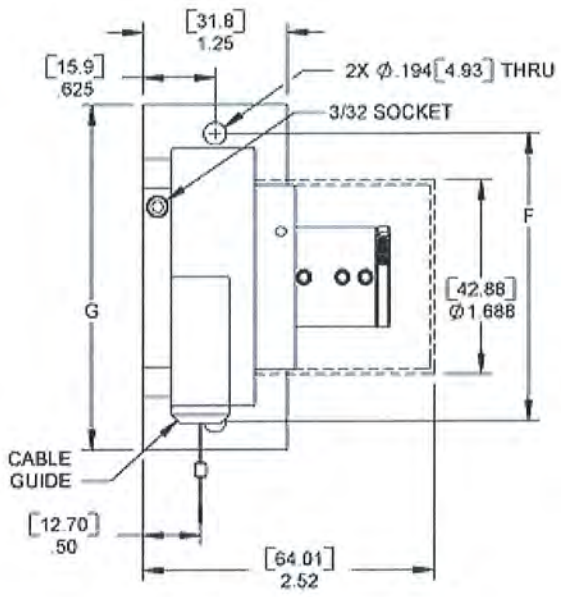
Series 161H	a	A	cable tension: -090
		B	cable tension: -100
	b	N	no sensor cover (_61)
		S	sensor cover (_61); pn 160060
	c	D	base: mounting disk (_6_); pn 160040-1
		S	base: standard (_61); pn 160015-3
		U	base: universal (_61); pn 160030-3
		B	base: big foot (_60/_61); pn 160015-13

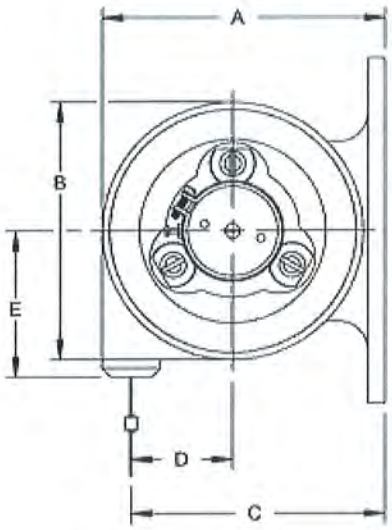
Series 162H	a	A	cable tension: -090
		B	cable tension: -100
	b	N	no sensor cover (_62)
		S	sensor cover (_62); pn 160060
	c	D	base: mounting disk (_6_); pn 160040-1
		S	base: standard (_62); pn 160015-5
		U	base: universal (_62); pn 160030-5
		B	base: big foot (_62); pn 160015-15

Displacement Cable Maximum Acceleration by Model Number

Model	Max Cable Acceleration (g)	
	Opt A: -090 spring	Opt B: -100 spring
161-0361H	100+	100+
161-0461H	100+	100+
161-1143H	337	100+
161-1283H	346	100+
161-1443H	215	100+
161-1915H	256	512
161-2145H	401	1354
161-2405H	100+	397
162-0521H	100+	100+
162-0651H	83	109
162-2735H	100+	100+
162-2945H	100+	100+
162-3205H	157	184
162-3405H	100+	100+

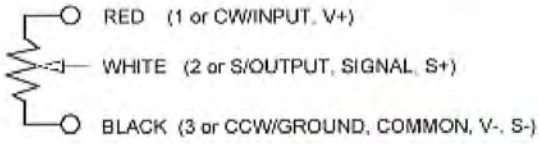
Drawing





SERIES	161H	162H
A	2.43[61.7]	3.18[80.8]
B	2.24[56.9]	3.00[76.2]
C	2.18[55.4]	2.94[74.7]
D	.87[22.1]	1.24[31.5]
E	1.27[32.3]	1.74[44.2]
F	2.50[63.5]	3.50[88.9]
G	3.00[76.2]	4.00[101.6]

Shown with big foot base (pn 160015-13).



For crimping of hardware to displacement cable, consider the 160001-01 installation kit. Need something not shown? Complete a Custom Solution Request.

All dimensions are REFERENCE and are in inches [mm] Data Sheet Series 161H and 162H Rev. A

Firstmark Controls • info@Firstmarkcontrols.com
An ISO9001:2000/AS9100B-Compliant Company
1176 Telecom Drive • Creedmoor, NC 27522 USA
Phone: 1-919-956-4203 • Fax: 919-682-3786 • Toll Free: 1-866-912-6232

Business hours: Mon-Fri, 8:00am to 5:00pm (Eastern time)

All specifications subject to change without notice.
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CERTIFICATE OF CALIBRATION

CUSTOMER: **Dynamic Analysis Group**

THIS IS TO CERTIFY THAT THE MEASURING INSTRUMENT LISTED BELOW HAS BEEN TESTED AND CALIBRATED IN ACCORDANCE WITH PRECISION TOOLS CALIBRATION PROCEDURES WHICH INCLUEDS MEASUREMENTS CERTIFIED AND TRACED TO N.I.S.T STANDARDS. CERTIFICATIONS PERFORMED ARE IN COMPLIANCE WITH ISO 9001. ALL CALIBRATIONS PERFORMED AT (72) DEG-F +/- (2) DEGREES WITH LESS THAN 65% HUMIDITY.

MANUFACTURE		CERT #	T1819-1	CAL DATE	8/26/2010
MODEL					
S/N	R012007	DESCRIPTION:	PRESSURE GUAGE	DUE DATE	8/26/2011
CAPACITY	0-150 psi	TEMP	72		
		HUM	65	ID #	

PRESSURE APPLIED	AS - FOUND READING	AS-LEFT READING
PSI	**PSI**	**PSI**
0.0	0.0	0.0
50.0	50.0	50.0
100.0	99.5	99.5
150.0	149.5	149.5

PROCEDURE USED: MFG. SPECS

PRECISION TOOLS
5829 W. SAM HOUSTON PKWY N.
SUITE 308
HOUSTON, TEXAS 77041

MIKE JAVADI
CERTIFIED TECHNICIAN

Test Facility: ***Location*** ***5***

Uvalde You can *PROVE IT...*

at the Uvalde Proving Grounds,
Uvalde Texas, USA

- **MAIN TRACK**
  8.5-mi (13,7-km) 3-lane oval
- **BRAKING/TRACTION TESTING**
  ABS & Traction Trailer Testing
  on 6 Surfaces (dry & wet)
- **WET TESTING FACILITIES**
  Wet Handling (Contidrom Design)
  Lateral Grip and 200-m Circles
  Hydroplaning lat. & longitudinal
- **VEHICLE DYNAMICS FACILITY**
  800' x 800' Platform (dry & wet)
  Dry Handling Track
  Ride Evaluation Course
- **OFF-ROAD COURSES**
  10 tracks for Handling and Durability
  300' x 150' Sand Basin
  Sand and Grass Hill Climbs, 3 slopes,
  Mud Track













- Year-round climate
- Privacy
- Terrific support staff
- Engineering, Testing, Consulting,
  European & US-Standards

Contact: Ella Samarron, Marketing Representative
Uvalde Proving Grounds
Phone: +1 830.591.7064 Fax: +1 830.591.7090
ella.samarron@conti-na.com

DVD Facility Tour available!

Continental

www.uvaldeprovinggrounds.com

The Ultimate in Automotive Testing Versatility



If you have something to prove, we have the place to prove it. The secluded compound of the Uvalde Proving Grounds features three of the most comprehensive Vehicle Dynamics, Traction, and Wet Grip Testing facilities available today. With over a dozen specialized tracks, a wide range of surfaces and configurations, and various off-road courses, virtually anything that rolls can prove its worth in vehicular construction, performance characteristics, or component quality. When you're ready to put your best to the test, we'll be ready for you.



A Unique Place for Special Events



For a product launch, professional meet and greet, or memorable ride and drive…we've got what it takes to make your next event unforgettable. Whether they're automotive experts or enthusiasts, your attendees will receive safety training and instruction on an exciting array of asphalt and gravel courses including the 8.5-mile main oval and the huge wet pad! Test courses are plotted with driving areas suitable for your instructional needs. Group transportation and catering services can add that special touch of Southwestern hospitality.

Alert to Your Safety and Security



One of our top priorities is the safety and security of Uvalde personnel, visitors, and clients. All receive orientation on safety policies and operating procedures. Drivers receive specific instructions for all courses. Security is maintained 24/7/365. The Uvalde Proving Grounds compound offers seclusion. A secure wire perimeter fence encompasses the entire 5000-acre facility. The facility is surrounded by Texas ranchland, providing an additional buffer of privacy.



Uvalde

PROVING GROUNDS

Continental TIRE

Prove it at the

Uvalde

PROVING GROUNDS









Continental TIRE

Uvalde PROVING GROUNDS

❶ MAIN TRACK



8.5-mi (13.7-km) oval track; suitable for testing vehicle components and handling at a wide range of speeds

- *3 lanes*
- *1-mi (1.6-km) radius turns*
- *1.1-mi (1.8-km) straightaway*

● VEHICLE DYNAMICS FACILITY

Featuring three courses (wet handling, dry handling, ride evaluation); provides ideal conditions for evaluating vehicle ride and handling performance - from suspension to components, and more

❷ Wet Handling Pad



At 15 acres (one of North America's largest), this state-of-the art pad can be wetted over its full surface and cone-configured for any test-course preference

- *800-ft x 800-ft (244-m x 244-m) asphalt pad*
- *100-ft (30-m) paved surround*
- *2 asphalt, high-speed approaches (2,200-ft./670-m; 1,800-ft/549-m)*
- *Vehicle Speeds: Vary by course configuration*

❸ Dry Handling Road Course

Our 1.07-mi (1.72-km) asphalt dry course includes multiple curves and twists, and a straightaway for on-center feel, lane-change, slalom, and other maneuvers



- *6 curve types - from 100-ft (30.5-m), to 500-ft (152.4-m) radius*
- *Straightaway: 1,200-ft (366-m) long, 70-ft (21.3-m) wide*
- *Vehicle Speeds: up 80-mph (130-kph)*



❹ Ride Evaluation Course

A 3-mi (4.8-km), multi-lane oval featuring various paved surfaces and impacts for measuring ride comfort, impact dampening, noise, suspension, durability, and component quality

- *4-lane straightaway*
- *Virtually level surfaces*
- *1,432-ft (436-m) radius curves*

● TRACTION TESTING FACILITY

Designed to meet strict auto manufacturing standards and changing customer needs, this facility features a number of lanes, surfaces, and speed ranges for evaluating tire and vehicle traction performance

❺ Wet Skid Testing



A 900-ft (274-m), multi-lane area with various surfaces for assessing skid and stopping characteristics under typical consumer-driving conditions



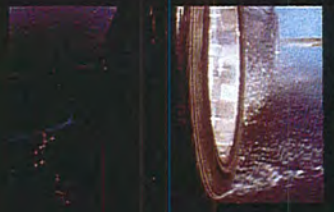
❻ Dry Skid Testing

Designed for traction trailers, with approaches 2,000-ft (610-m) long, up to 100-ft (30-m) wide

❼ SPECIAL TESTING

Special test areas include

- *Curb testing*
- *Rapid air loss*
- *Pothole test*



● WET GRIP FACILITIES

Designed as exact replicas of those featured at the Continental Proving Grounds in Germany



❽ Lateral Grip Circle

For both objective/subjective evaluations, as well as testing of vehicle-control systems

- *Surface: wet asphalt*
- *Inner Diameter: 180-ft (55-m)*
- *Water Depth: adjustable to accommodate customer needs, typically 0.04-in (1-mm)*
- *Typical Speeds: up to 30-mph (50-kph)*

❾ 200-m Circle

Simulates water puddles in curves on public roads



- *Inner Diameter/Surfaces: 650-ft (200-m) dry asphalt; 66-ft (20-m) wet asphalt*
- *Water Supply: embedded water lines; typical depth: 0.24-in (6-mm)*
- *Speeds: up to 60-mph (97-kph) on dry surface*



❿ Wet Handling Road Course

A challenging asphalt wet-road course

- *Dimensions: 5,100-ft (1,555-m) length; 20-ft (6.1-m) width*
- *Water Supply: trickle system; typical depth: 0.04-in (1-mm)*
- *Speeds: up to 70-mph (110-kph)*

Continental TIRE

OFF-ROAD COURSES

Ten courses available

- *5 dirt/gravel road courses (Hill Climb, A, N, P, R)*
- *3 gravel road courses (L, F, K)*
- *1 cut and chip rock course (C)*
- *1 mud course (R)*



11 Hill Climb Course

Ideal for off-road truck tire development, off-road vehicle construction, automotive component testing

- *Composition: native stone and clay*
- *Inclines: 9%, 15%*

A A-Course

- *3-mi (4.8-km) triangular course*
- *Composition: includes "chert" (razor-sharp flint) for testing tires' ability to endure harsh off-road conditions*
- *Max. Speed: 45-mph (72-kph)*

C C-Course

For very demanding vehicle and automotive component testing

- *Composition: Knippa traprocks, with a total depth of 5-inches (13-cm)*
- *0.5-mi straightaway, with turnaround loops at each end*

F F-Course

One-lane, 1.5-mi (2.4-km) oval

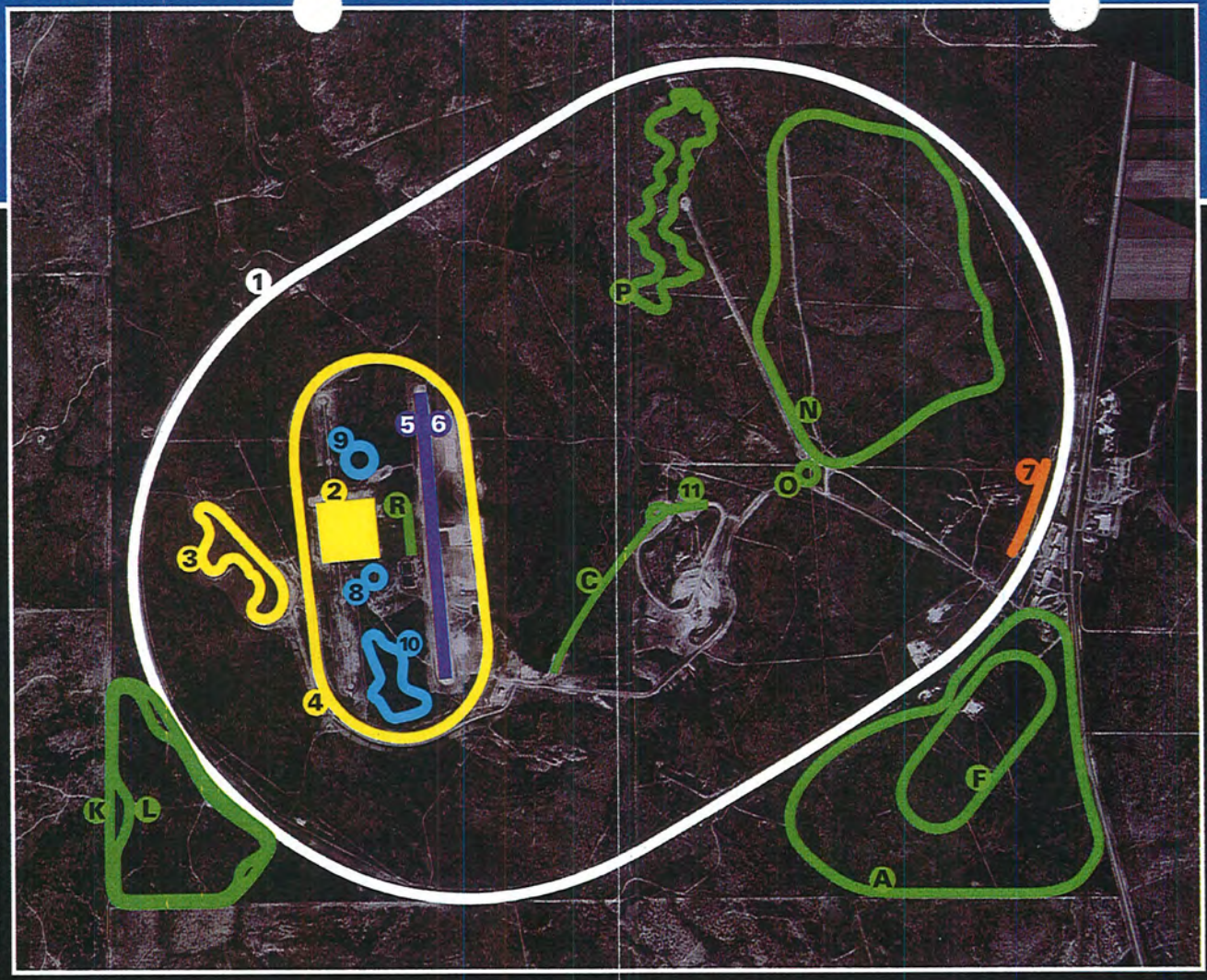
- *Composition: "Caliche" gravel mixture*
- *Max Speed: 45-mph (72-kph)*

K K-Course

Serpentine, 2-mi (3.2-km) circular

- *Composition: clay-based gravel*
- *Limestone aggregate surface*





L L-Course

Serpentine, clay-based gravel road, limestone aggregate

N N-Course

Semi-circular, 3-mi (4.8-km), compacted native soils/gravel

O O-Course

Gravel bed ideal for checking stone retention of tread designs

P P-Course

Serpentine, 2-mi (3.2-km) "Baja"-type course for higher-speed testing on gravel, flint, rock and dirt

- *Steep 4-wheel drive hill climb*
- *Adjacent mud, sand, and gravel pits*

R R-Course

With straight section course that can be wetted for "mud" testing

- *300-ft (91-m) long; 20-ft (6-m) wide*

Uvalde

PROVING GROUNDS

Continental TIRE

CUSTOMER SERVICE:

Our Customer Service Department handles all customer requests and bookings for customers interested in utilizing our facilities.

Additional services offered by Customer Service include coordination and arrangements for:

- *Customer testing resources and support*
- *Specific catering needs*
- *Support for special events*
- *Transportation from local and San Antonio Airports*
- *Other services provided are vehicle rental arrangements, hotel reservations, airline reservation changes, etc.*

CONTACT:

Sales & Marketing

telephone: 830-591-7064
e-mail: info@uvaldeprovinggrounds.com
www.uvaldeprovinggrounds.com

Continental Tire North America, Inc.
Uvalde Proving Grounds
Batesville Road
P.O. Box 480
Uvalde, Texas 78802-0480

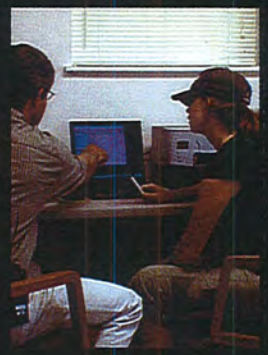
Uvalde Overview

The Uvalde Proving Grounds of Continental Tire North America, Inc., has been raising the bar in automotive testing technology since 1959. Surrounded by remote ranchlands, yet close enough for comfort to the town of Uvalde, Texas, the 5,000-acre Proving Grounds are home to world class testing facilities for assessing vehicle and component ride, comfort, handling, durability, quality, and more.

We also welcome those outside the testing industry who seek the perfect place for their next business meeting, product presentation, or club outing.

Private offices and conference rooms, workshops areas, garages, and service bays are also available to meet your project requirements.













Climate Control

Unlike some testing facilities, Uvalde has the advantage of a climate that provides all-year accessibility. Manufacturers can assess auto and on-vehicle component performance under moderate weather conditions throughout the winter. Average winter temperature reaches 68 degrees F (20° C).

Down the Road

The Uvalde area provides a number of options for lodging, dining, and local activities that feature Southwestern charm and reasonable pricing. Relative proximity to major highways, San Antonio's international airport and its famed Riverwalk, enhance your Uvalde Proving Grounds experience.



1995 MCI 102DL3 Vehicle Testing

Track Preparation

Uvalde Proving Grounds

June 12-14, 2011

∂AG DYNAMIC ANALYSIS GROUP LLC

Track Preparation.png



Track Preparation_2882.jpg



Track Preparation_2883.jpg



Track Preparation_2884.jpg



Track Preparation_2885.jpg

9

Test Results: *Index of Tests* 6

1995 MCI 102DL3

TEST INDEX

Test	Description	Nominal Speed (mph)	Driver	Loading Condition
1	Low Speed Turn, Unlocked	10	KJG	44 Passenger Loading
2	Low Speed Turn, Locked	10	KJG	44 Passenger Loading
3	Straight Line Drive, Dynamic Unlock	70	KJG	44 Passenger Loading
4	Straight Line Drive, Dynamic Unlock	70	KJG	44 Passenger Loading
5	Straight Line Drive, Dynamic Unlock	70	KJG	44 Passenger Loading
6	Straight Line Drive, Dynamic Unlock	70	KJG	44 Passenger Loading
7	Straight Line Drive, Dynamic Unlock	70	KJG	44 Passenger Loading
8	Straight Line Drive, Dynamic Unlock	70	KJG	44 Passenger Loading
9	Dynamic Unlock in a Curve, Downhill to the Left	70	KJG	44 Passenger Loading
10	Dynamic Unlock in a Curve, Uphill to the Right	70	KJG	44 Passenger Loading
11	Dynamic Unlock in a Curve, Uphill to the Left	70	KJG	44 Passenger Loading
12	Dynamic Unlock in a Curve, Downhill to the Right	70	KJG	44 Passenger Loading
13	Frequency Response, Locked	62	KJG	44 Passenger Loading
14	Frequency Response, Locked	62	KJG	44 Passenger Loading
15	Frequency Response, Unlocked	62	KJG	44 Passenger Loading
16	Frequency Response, Unlocked	62	KJG	44 Passenger Loading
17	On-Center Handling, Locked	62	KJG	44 Passenger Loading
18	On-Center Handling, Locked	62	KJG	44 Passenger Loading
19	On-Center Handling, Unlocked	62	KJG	44 Passenger Loading
20	On-Center Handling, Unlocked	62	KJG	44 Passenger Loading
21	Road Edge & Crown, Locked	62	KJG	44 Passenger Loading
22	Road Edge & Crown, Locked	62	KJG	44 Passenger Loading
23	Road Edge & Crown, Unlocked	62	KJG	44 Passenger Loading
24	Road Edge & Crown, Unlocked	62	KJG	44 Passenger Loading
25	Low-g Step Steer, Locked	62	KJG	44 Passenger Loading
26	Low-g Step Steer, Locked	62	KJG	44 Passenger Loading
27	Low-g Step Steer, Locked	62	KJG	44 Passenger Loading
28	Low-g Step Steer, Locked	62	KJG	44 Passenger Loading
29	Low-g Step Steer, Unlocked	62	KJG	44 Passenger Loading
30	Low-g Step Steer, Unlocked	62	KJG	44 Passenger Loading
31	Low-g Step Steer, Unlocked	62	KJG	44 Passenger Loading
32	Low-g Step Steer, Unlocked	62	KJG	44 Passenger Loading
33	Open Loop Lane Change, Locked	70	KJG	44 Passenger Loading
34	Open Loop Lane Change, Locked	70	KJG	44 Passenger Loading
35	Open Loop Lane Change, Unlocked	70	KJG	44 Passenger Loading
36	Open Loop Lane Change, Unlocked	70	KJG	44 Passenger Loading
37	Dynamic Unlock in a Curve, Downhill to the Right with Braking	70	KJG	44 Passenger Loading
38	Dynamic Unlock, Downhill to Right, Intentional Steer Toward Shoulder	70	KJG	44 Passenger Loading

Test	Description	Nominal Speed (mph)	Driver	Loading Condition
39	Dynamic Unlock, Downhill to Right, Intentional Steer to Shoulder, Braking	70	KJG	44 Passenger Loading
40	Dynamic Unlock, Downhill to Right, Intentional Steer to Shoulder & Left, Braking	70	KJG	44 Passenger Loading
41	Extended Driving, Locked	70	KJG	44 Passenger Loading
42	Extended Driving, Unlocked	70	KJG	44 Passenger Loading
43	Surprise Unlock	70	KJG	44 Passenger Loading
44	Dynamic Unlock in a Curve, Downhill to the Right with Braking, Wet Surface	70	KJG	44 Passenger Loading
45	Dynamic Unlock, Downhill to Right, Intentional Steer to Shoulder, Wet Surface	70	KJG	44 Passenger Loading
46	Dynamic Unlock, Downhill to Right, Intentional Steer to Shoulder, Braking, Wet	70	KJG	44 Passenger Loading
47	Dynamic Unlock, Downhill to Right, Intentional Steer to Shoulder & Left, Braking, Wet	70	KJG	44 Passenger Loading
48	Modified U-Joint Bearing - Lap 1	70	KJG	44 Passenger Loading
49	Modified U-Joint Bearing - Lap 2	70	KJG	44 Passenger Loading
50	Modified U-Joint Bearing - Laps 3 and 4	70	KJG	44 Passenger Loading
51	Modified U-joint Bearing - Lap 5, Incomplete Data	70	KJG	44 Passenger Loading
52	Modified U-joint Bearing - Lap 6	70	KJG	44 Passenger Loading
53	Modified U-joint Bearing - Lap 7	70	KJG	44 Passenger Loading
54	Modified U-joint Bearing - Lap 8	70	KJG	44 Passenger Loading
55	Modified U-joint Bearing - Lap 9, first half	70	KJG	44 Passenger Loading
56	Modified U-joint Bearing - Lap 9, second half	70	KJG	44 Passenger Loading
57	Modified U-joint Bearing - Lap 10	70	KJG	44 Passenger Loading
58	Modified U-joint Bearing - Lap 11	70	KJG	44 Passenger Loading
59	Modified U-joint Bearing - Lap 12	70	KJG	44 Passenger Loading
60	Modified U-joint Bearing - Lap 13	70	KJG	44 Passenger Loading
61	Modified U-joint Bearing - Lap 14	70	KJG	44 Passenger Loading
62	Modified U-joint Bearing - Lap 15	70	KJG	44 Passenger Loading
63	Modified U-joint Bearing - Lap 16	70	KJG	44 Passenger Loading
64	Modified U-joint Bearing - Lap 17	70	KJG	44 Passenger Loading
65	Modified U-joint Bearing - Lap 18	70	KJG	44 Passenger Loading
66	Modified U-joint Bearing - Lap 19	70	KJG	44 Passenger Loading
67	Modified U-joint Bearing - Lap 20	70	KJG	44 Passenger Loading
68	Modified U-joint Bearing - Lap 21	70	KJG	44 Passenger Loading
69	Modified U-joint Bearing - Lap 22	70	KJG	44 Passenger Loading
70	Modified U-joint Bearing - Lap 23	70	KJG	44 Passenger Loading
71	Modified U-joint Bearing - Lap 24	70	KJG	44 Passenger Loading
72	Modified U-joint Bearing - Lap 25	70	KJG	44 Passenger Loading
73	Modified U-joint Bearing - Lap 26	70	KJG	44 Passenger Loading
74	Modified U-joint Bearing - Lap 27	70	KJG	44 Passenger Loading
75	Modified U-joint Bearing - Lap 28	70	KJG	44 Passenger Loading
76	Modified U-joint Bearing - Lap 29	70	KJG	44 Passenger Loading
77	Modified U-joint Bearing - Lap 30	70	KJG	44 Passenger Loading

Test	Description	Nominal Speed (mph)	Driver	Loading Condition
78	Modified U-joint Bearing - Lap 31	70	KJG	44 Passenger Loading
79	Modified U-joint Bearing - Lap 32	70	KJG	44 Passenger Loading
80	Modified U-joint Bearing - Lap 33, first half	70	KJG	44 Passenger Loading
81	Modified U-joint Bearing - Lap 33, second half	70	KJG	44 Passenger Loading
82	Modified U-joint Bearing - Laps 34 & 35	70	KJG	44 Passenger Loading

Test Notes

Vehicle: 1995 MCI 102DL3
Tires: Firestone FS 400

VIN: 1M8PDMPA5SP047805
Size: 315/80R22.5 Load Range J

Test Date(s): 6/12 - 6/14/11
Test Location(s): Uvalde
Pressures: 115/95/95

Test No.	Test Name	Driver	Loading	File No.	FileName	Date
	Data Zero	KJG	44 Passengers	1	VBOX0001.VBO	6/12/2011
1	Low Speed Turn, Unlocked	KJG	44 Passengers	2	VBOX0002.VBO	6/12/2011
2	Low Speed Turn, Locked	KJG	44 Passengers	3	VBOX0003.VBO	6/12/2011
3	Straight Line Drive, Dynamic Unlock	KJG	44 Passengers	4	VBOX0004.VBO	6/12/2011
4	Straight Line Drive, Dynamic Unlock	KJG	44 Passengers	5	VBOX0005.VBO	6/12/2011
5	Straight Line Drive, Dynamic Unlock	KJG	44 Passengers	6	VBOX0006.VBO	6/12/2011
6	Straight Line Drive, Dynamic Unlock	KJG	44 Passengers	7	VBOX0007.VBO	6/12/2011
7	Straight Line Drive, Dynamic Unlock	KJG	44 Passengers	8	VBOX0008.VBO	6/12/2011
8	Straight Line Drive, Dynamic Unlock	KJG	44 Passengers	9	VBOX0009.VBO	6/12/2011
9	Dynamic Unlock in a Curve, Downhill to the Left	KJG	44 Passengers	10	VBOX0010.VBO	6/12/2011
10	Dynamic Unlock in a Curve, Uphill to the Right	KJG	44 Passengers	11	VBOX0011.VBO	6/12/2011
11	Dynamic Unlock in a Curve, Uphill to the Left	KJG	44 Passengers	12	VBOX0012.VBO	6/12/2011
12	Dynamic Unlock in a Curve, Downhill to the Right	KJG	44 Passengers	13	VBOX0013.VBO	6/12/2011
13	Frequency Response, Locked	KJG	44 Passengers	14	VBOX0014.VBO	6/12/2011
14	Frequency Response, Locked	KJG	44 Passengers	15	VBOX0015.VBO	6/12/2011
15	Frequency Response, Unlocked	KJG	44 Passengers	16	VBOX0016.VBO	6/12/2011
16	Frequency Response, Unlocked	KJG	44 Passengers	17	VBOX0017.VBO	6/12/2011
17	On-Center Handling, Locked	KJG	44 Passengers	18	VBOX0018.VBO	6/13/2011
18	On-Center Handling, Locked	KJG	44 Passengers	19	VBOX0019.VBO	6/13/2011
19	On-Center Handling, Unlocked	KJG	44 Passengers	20	VBOX0020.VBO	6/13/2011
20	On-Center Handling, Unlocked	KJG	44 Passengers	21	VBOX0021.VBO	6/13/2011
21	Road Edge & Crown, Locked	KJG	44 Passengers	22	VBOX0022.VBO	6/13/2011
22	Road Edge & Crown, Locked	KJG	44 Passengers	23	VBOX0023.VBO	6/13/2011
23	Road Edge & Crown, Unlocked	KJG	44 Passengers	24	VBOX0024.VBO	6/13/2011
24	Road Edge & Crown, Unlocked	KJG	44 Passengers	25	VBOX0025.VBO	6/13/2011
25	Low-g Step Steer, Locked	KJG	44 Passengers	26	VBOX0026.VBO	6/13/2011
26	Low-g Step Steer, Locked	KJG	44 Passengers	27	VBOX0027.VBO	6/13/2011
27	Low-g Step Steer, Locked	KJG	44 Passengers	28	VBOX0028.VBO	6/13/2011
28	Low-g Step Steer, Locked	KJG	44 Passengers	29	VBOX0029.VBO	6/13/2011
29	Low-g Step Steer, Unlocked	KJG	44 Passengers	30	VBOX0030.VBO	6/13/2011
30	Low-g Step Steer, Unlocked	KJG	44 Passengers	31	VBOX0031.VBO	6/13/2011
31	Low-g Step Steer, Unlocked	KJG	44 Passengers	32	VBOX0032.VBO	6/13/2011
32	Low-g Step Steer, Unlocked	KJG	44 Passengers	33	VBOX0033.VBO	6/13/2011
33	Open Loop Lane Change, Locked	KJG	44 Passengers	34	VBOX0034.VBO	6/13/2011
34	Open Loop Lane Change, Locked	KJG	44 Passengers	35	VBOX0035.VBO	6/13/2011
35	Open Loop Lane Change, Unlocked	KJG	44 Passengers	36	VBOX0036.VBO	6/13/2011
36	Open Loop Lane Change, Unlocked	KJG	44 Passengers	37	VBOX0037.VBO	6/13/2011
37	Dynamic Unlock in a Curve, Downhill to the Right with Braking	KJG	44 Passengers	38	VBOX0038.VBO	6/13/2011
38	Dynamic Unlock in a Curve, Downhill to the Right with Intentional Steer Toward Shoulder	KJG	44 Passengers	39	VBOX0039.VBO	6/13/2011
39	Dynamic Unlock in a Curve, Downhill to the Right with Intentional Steer Toward Shoulder &	KJG	44 Passengers	40	VBOX0040.VBO	6/13/2011

Test Notes

Test Date(s): 6/12 - 6/14/11

Vehicle: 1995 MCI 102DL3 VIN: 1M8PDMPA5SPO47805 Test Location(s): Uvalde

Tires: Firestone FS 400 Size: 315/80R22.5 Load Range J Pressures: 115/95/95

Test No.	Test Name	Driver	Loading	File No.	FileName	Date
40	Dynamic Unlock in a Curve, Downhill to the Right with Intentional Steer Toward Shoulder, Braking, & Steer To Left	KJG	44 Passengers	41	VBOX0041.VBO	6/13/2011
41	Extended Driving, Locked	KJG	44 Passengers	42	VBOX0042.VBO	6/13/2011
42	Extended Driving, Unlocked	KJG	44 Passengers	43	VBOX0043.VBO	6/13/2011
43	Surprise Unlock	KJG	44 Passengers	44	VBOX0044.VBO	6/13/2011
44	Dynamic Unlock in a Curve, Downhill to the Right with Braking, Wet Surface	KJG	44 Passengers	45	VBOX0045.VBO	6/13/2011
45	Dynamic Unlock in a Curve, Downhill to the Right with Intentional Steer Toward Shoulder, Wet	KJG	44 Passengers	46	VBOX0046.VBO	6/13/2011
46	Dynamic Unlock in a Curve, Downhill to the Right with Intentional Steer Toward Shoulder & Braking, Wet Surface	KJG	44 Passengers	47	VBOX0047.VBO	6/13/2011
47	Dynamic Unlock in a Curve, Downhill to the Right with Intentional Steer Toward Shoulder, Braking, & Steer To Left, Wet Surface	KJG	44 Passengers	48	VBOX0048.VBO	6/13/2011
48	Modified U-Joint Bearing - Lap 1	KJG	44 Passengers	49	VBOX0049.VBO	6/13/2011
49	Modified U-Joint Bearing - Lap 2	KJG	44 Passengers	50	VBOX0050.VBO	6/13/2011
50	Modified U-Joint Bearing - Lap 3,4	KJG	44 Passengers	51	VBOX0051.VBO	6/13/2011
51	Modified U-joint Bearing - Lap 5, incomplete	KJG	44 Passengers	52	VBOX0052.VBO	6/14/2011
52	Modified U-joint Bearing - Lap 6	KJG	44 Passengers	53	VBOX0053.VBO	6/14/2011
53	Modified U-joint Bearing - Lap 7	KJG	44 Passengers	54	VBOX0054.VBO	6/14/2011
54	Modified U-joint Bearing - Lap 8	KJG	44 Passengers	55	VBOX0055.VBO	6/14/2011
55	Modified U-joint Bearing - Lap 9, first half	KJG	44 Passengers	56	VBOX0056.VBO	6/14/2011
56	Modified U-joint Bearing - Lap 9, second half	KJG	44 Passengers	57	VBOX0057.VBO	6/14/2011
57	Modified U-joint Bearing - Lap 10	KJG	44 Passengers	58	VBOX0058.VBO	6/14/2011
58	Modified U-joint Bearing - Lap 11	KJG	44 Passengers	59	VBOX0059.VBO	6/14/2011
59	Modified U-joint Bearing - Lap 12	KJG	44 Passengers	60	VBOX0060.VBO	6/14/2011
60	Modified U-joint Bearing - Lap 13	KJG	44 Passengers	61	VBOX0061.VBO	6/14/2011
61	Modified U-joint Bearing - Lap 14	KJG	44 Passengers	62	VBOX0062.VBO	6/14/2011
62	Modified U-joint Bearing - Lap 15	KJG	44 Passengers	63	VBOX0063.VBO	6/14/2011
63	Modified U-joint Bearing - Lap 16	KJG	44 Passengers	64	VBOX0064.VBO	6/14/2011
64	Modified U-joint Bearing - Lap 17	KJG	44 Passengers	65	VBOX0065.VBO	6/14/2011
65	Modified U-joint Bearing - Lap 18	KJG	44 Passengers	66	VBOX0066.VBO	6/14/2011
66	Modified U-joint Bearing - Lap 19	KJG	44 Passengers	67	VBOX0067.VBO	6/14/2011
67	Modified U-joint Bearing - Lap 20	KJG	44 Passengers	68	VBOX0068.VBO	6/14/2011
68	Modified U-joint Bearing - Lap 21	KJG	44 Passengers	69	VBOX0069.VBO	6/14/2011
69	Modified U-joint Bearing - Lap 22	KJG	44 Passengers	70	VBOX0070.VBO	6/14/2011
70	Modified U-joint Bearing - Lap 23	KJG	44 Passengers	71	VBOX0071.VBO	6/14/2011
71	Modified U-joint Bearing - Lap 24	KJG	44 Passengers	72	VBOX0072.VBO	6/14/2011
72	Modified U-joint Bearing - Lap 25	KJG	44 Passengers	73	VBOX0073.VBO	6/14/2011
73	Modified U-joint Bearing - Lap 26	KJG	44 Passengers	74	VBOX0074.VBO	6/14/2011
74	Modified U-joint Bearing - Lap 27	KJG	44 Passengers	75	VBOX0075.VBO	6/14/2011
75	Modified U-joint Bearing - Lap 28	KJG	44 Passengers	76	VBOX0076.VBO	6/14/2011
76	Modified U-joint Bearing - Lap 29	KJG	44 Passengers	77	VBOX0077.VBO	6/14/2011

Test Notes

Vehicle: 1995 MCI 102DL3
Tires: Firestone FS 400
VIN: 1M8PDMPA5SP047805
Size: 315/80R22.5 Load Range J
Test Date(s): 6/12 - 6/14/11
Test Location(s): Uvalde
Pressures: 115/95/95

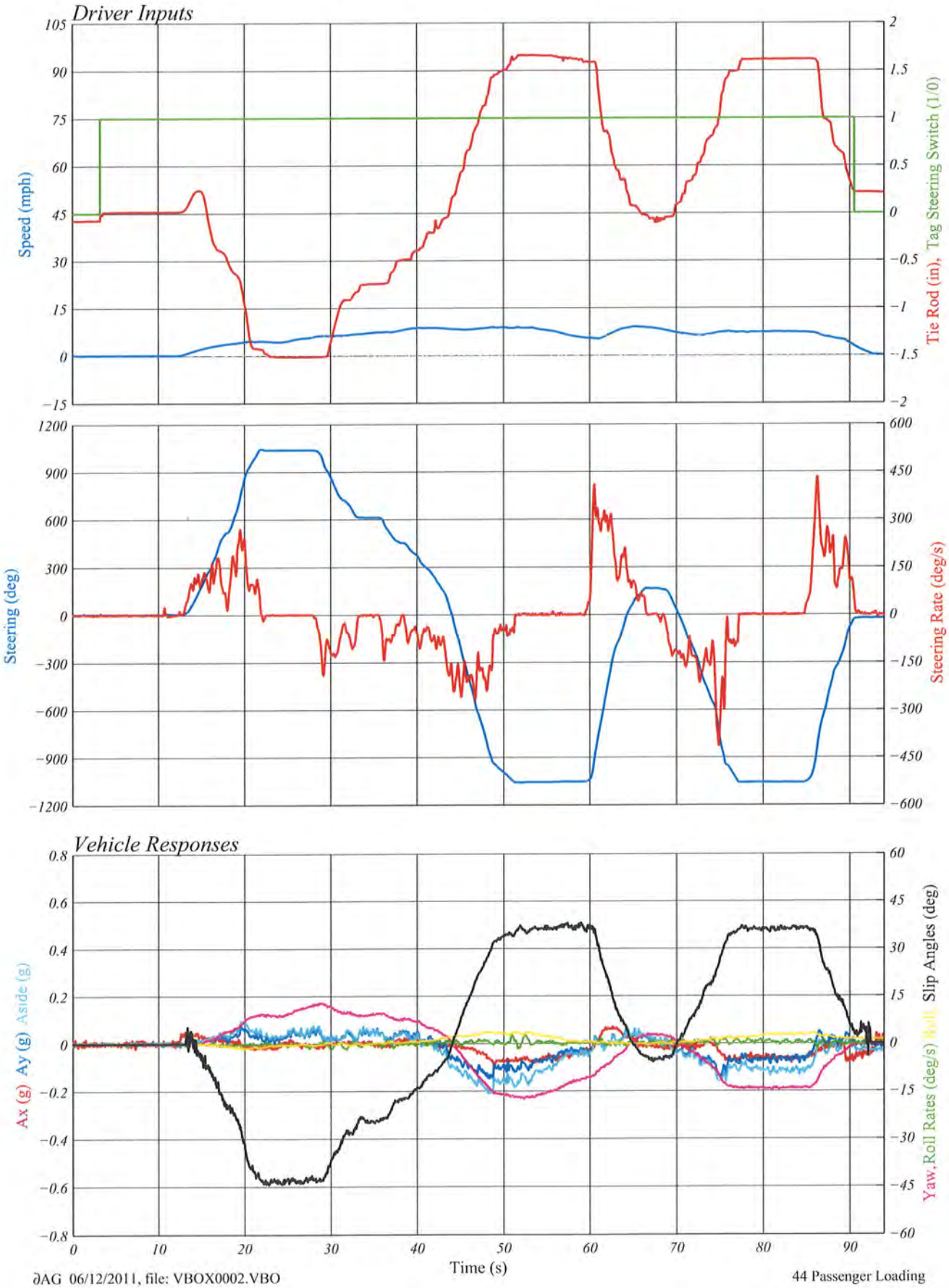
Test No.	Test Name	Driver	Loading	File No.	FileName	Date
77	Modified U-joint Bearing - Lap 30	KJG	44 Passengers	78	VBOX0078.VBO	6/14/2011
78	Modified U-joint Bearing - Lap 31	KJG	44 Passengers	79	VBOX0079.VBO	6/14/2011
79	Modified U-joint Bearing - Lap 32	KJG	44 Passengers	80	VBOX0080.VBO	6/14/2011
80	Modified U-joint Bearing - Lap 33, first half	KJG	44 Passengers	81	VBOX0081.VBO	6/14/2011
81	Modified U-joint Bearing - Lap 33, second half	KJG	44 Passengers	82	VBOX0082.VBO	6/14/2011
82	Modified U-joint Bearing - Lap 34, 35	KJG	44 Passengers	83	VBOX0083.VBO	6/14/2011

Data Plots 7

Test: 1

1995 MCI 102DL3

Low Speed Turn, Unlocked



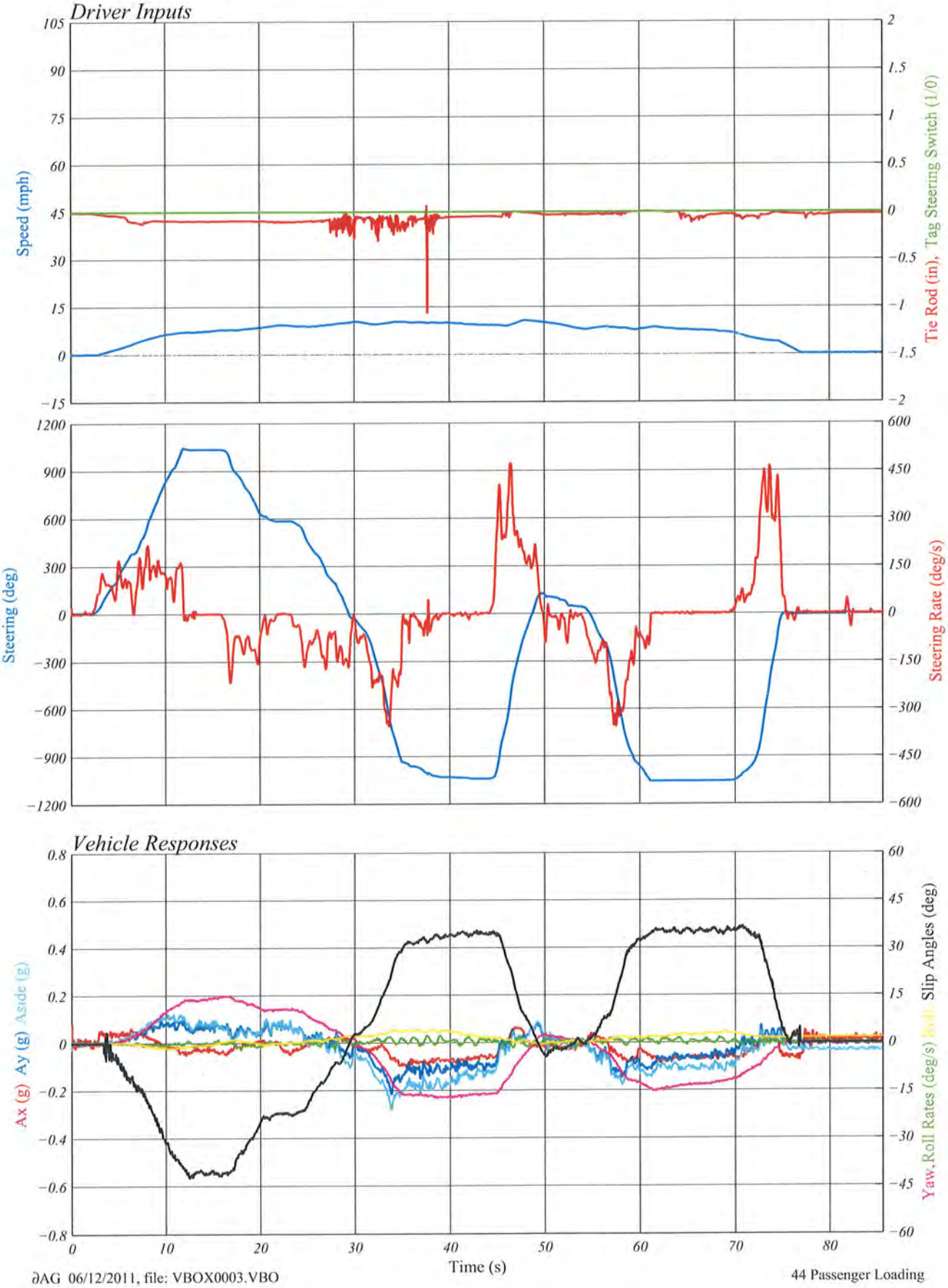
∂AG 06/12/2011, file: VBOX0002.VBO

44 Passenger Loading

Test: 2

1995 MCI 102DL3

Low Speed Turn, Locked



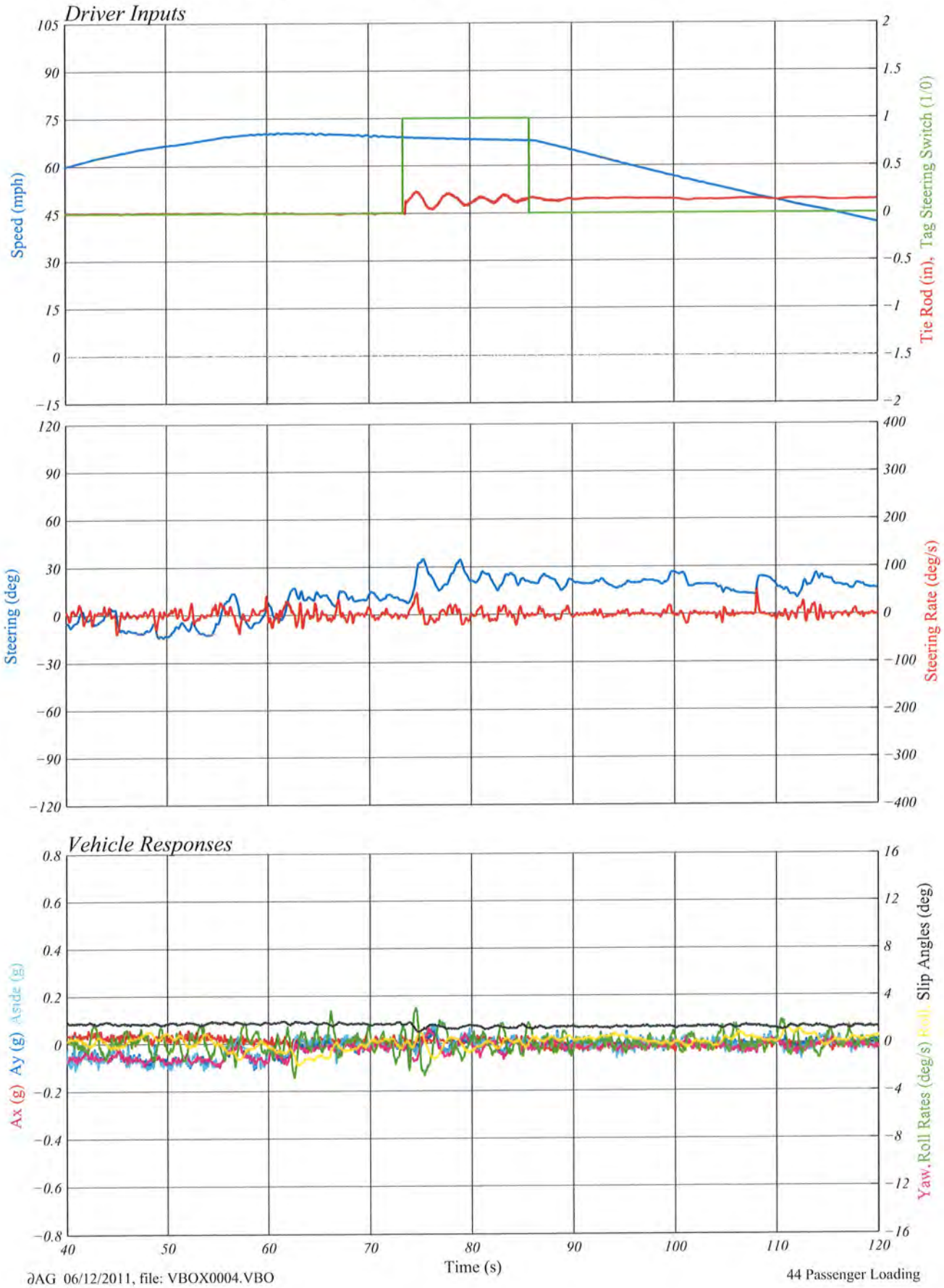
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44 Passenger Loading

Test: 3

1995 MCI 102DL3

Straight Line Drive, Dynamic Unlock



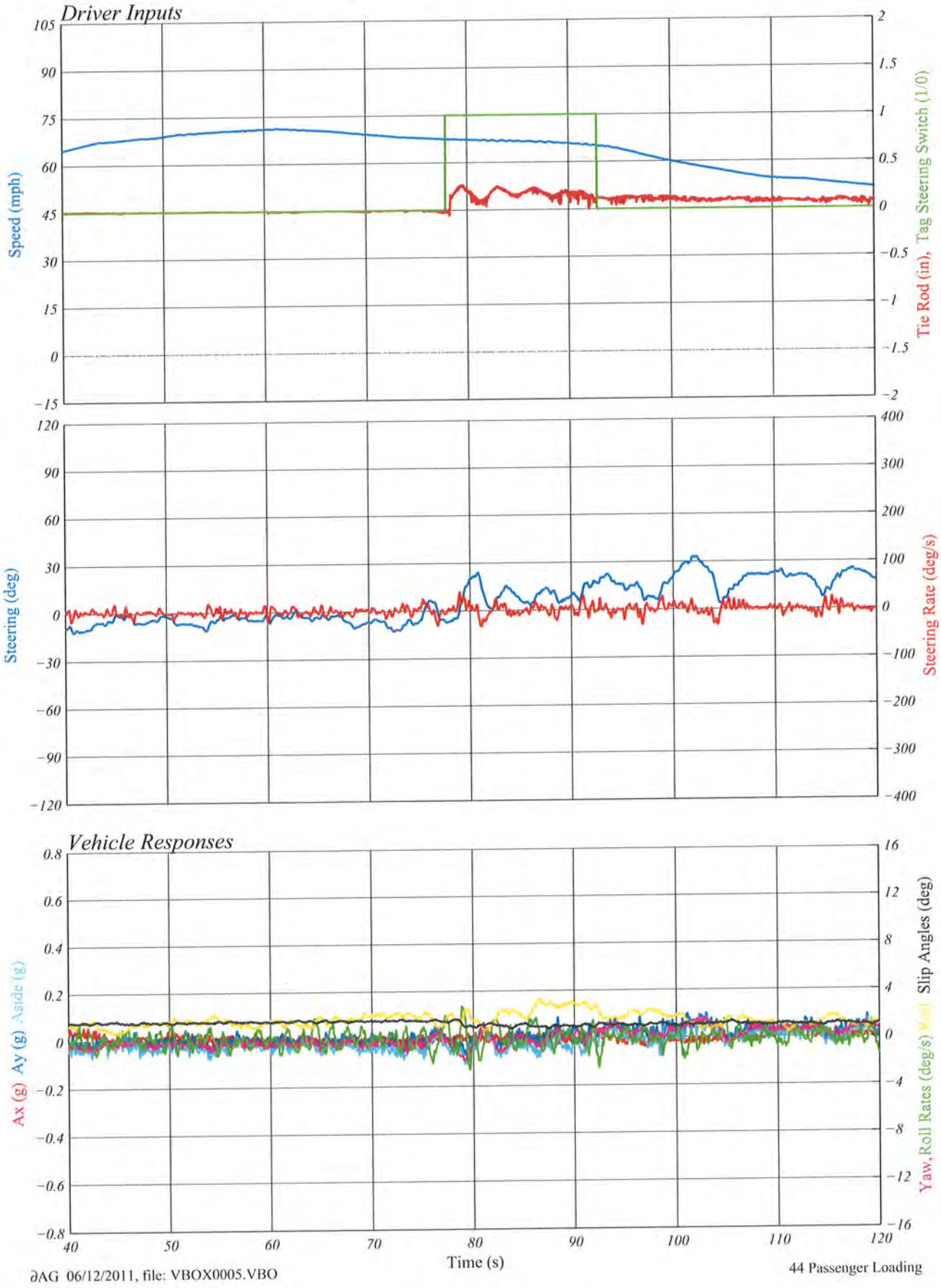
∂AG 06/12/2011, file: VBOX0004.VBO

44 Passenger Loading

Test: 4

1995 MCI 102DL3

Straight Line Drive, Dynamic Unlock



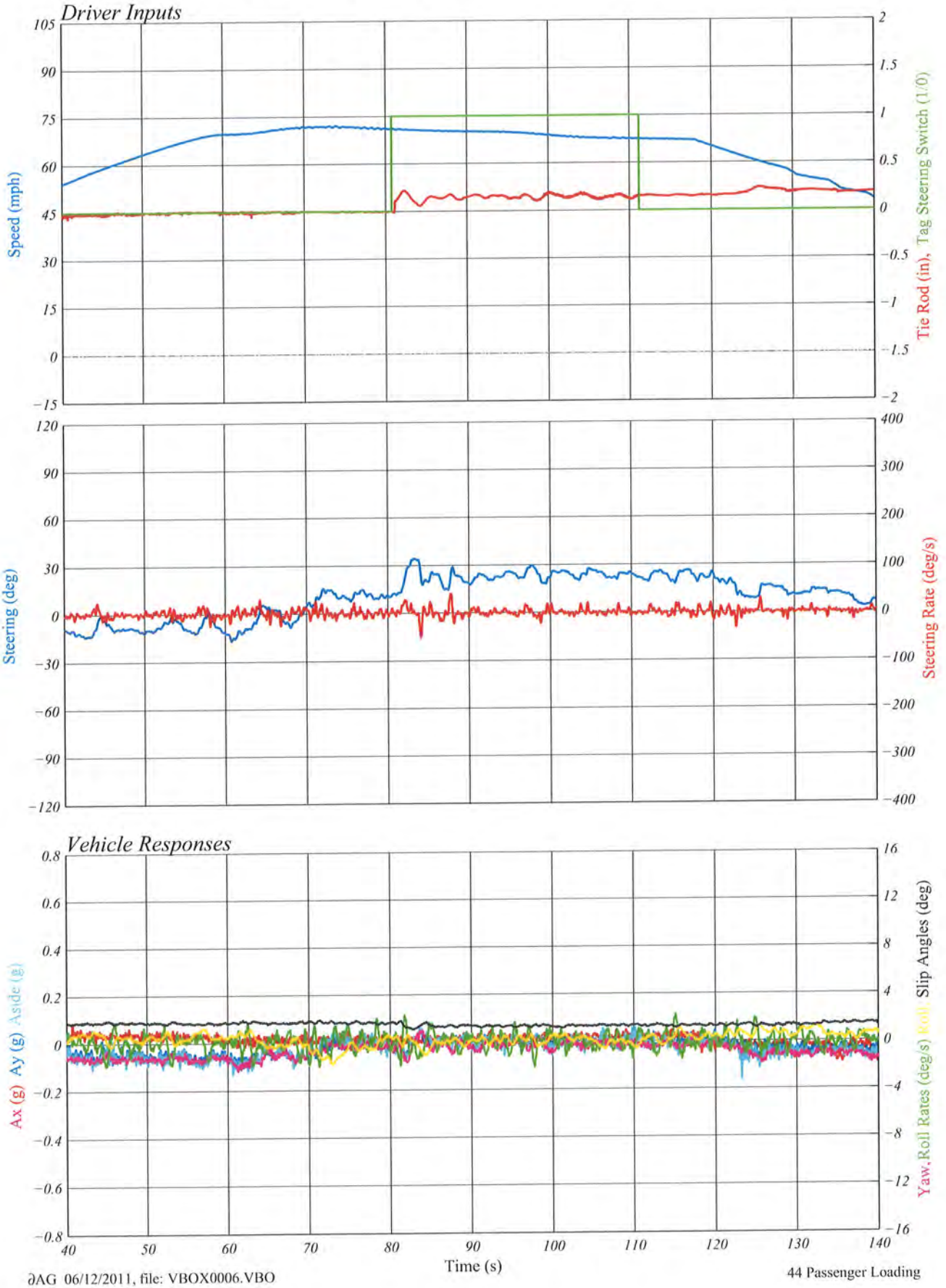
∂AG 06/12/2011, file: VBOX0005.VBO

44 Passenger Loading

Test: 5

1995 MCI 102DL3

Straight Line Drive, Dynamic Unlock



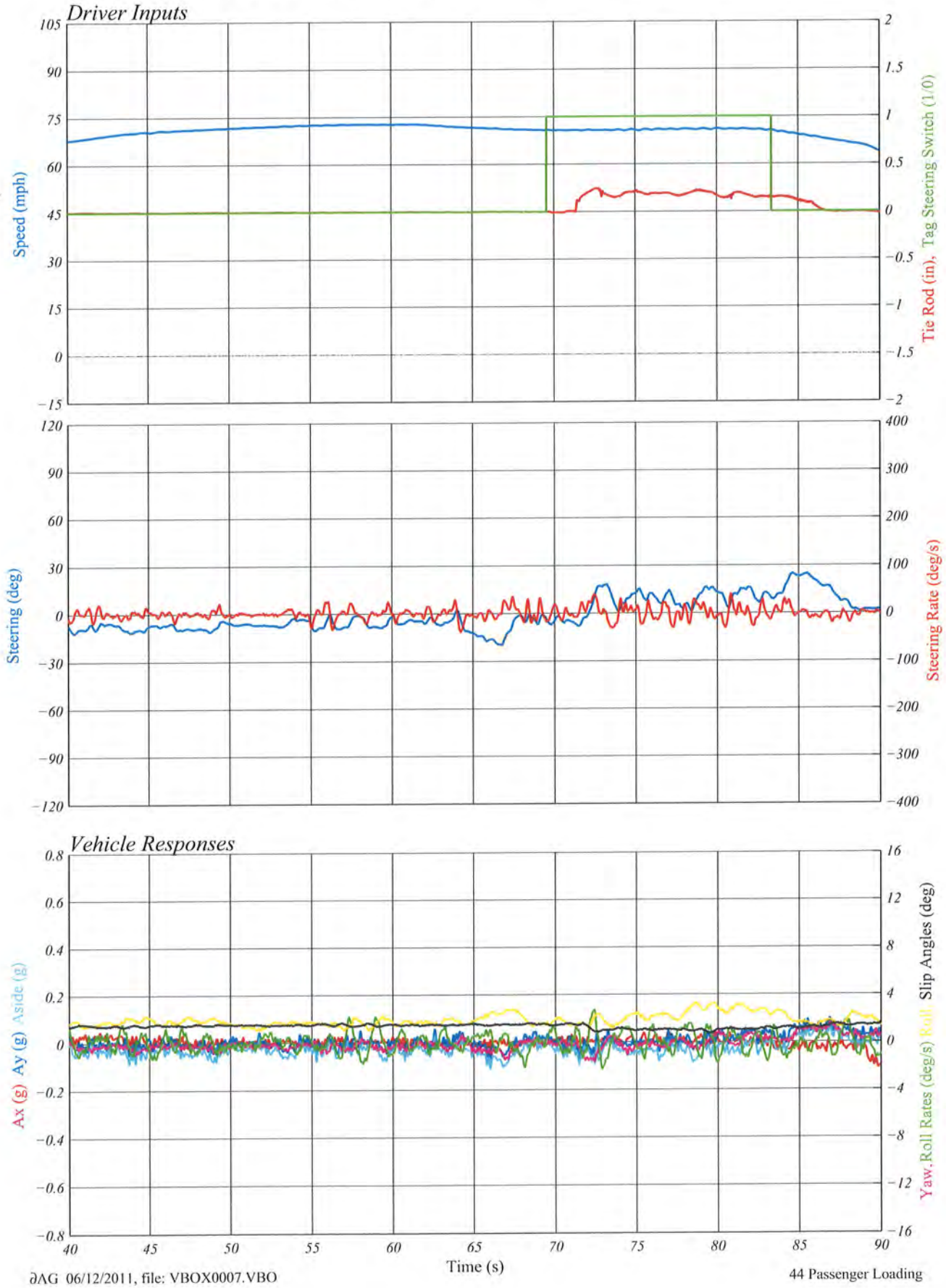
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44 Passenger Loading

Test: 6

1995 MCI 102DL3

Straight Line Drive, Dynamic Unlock



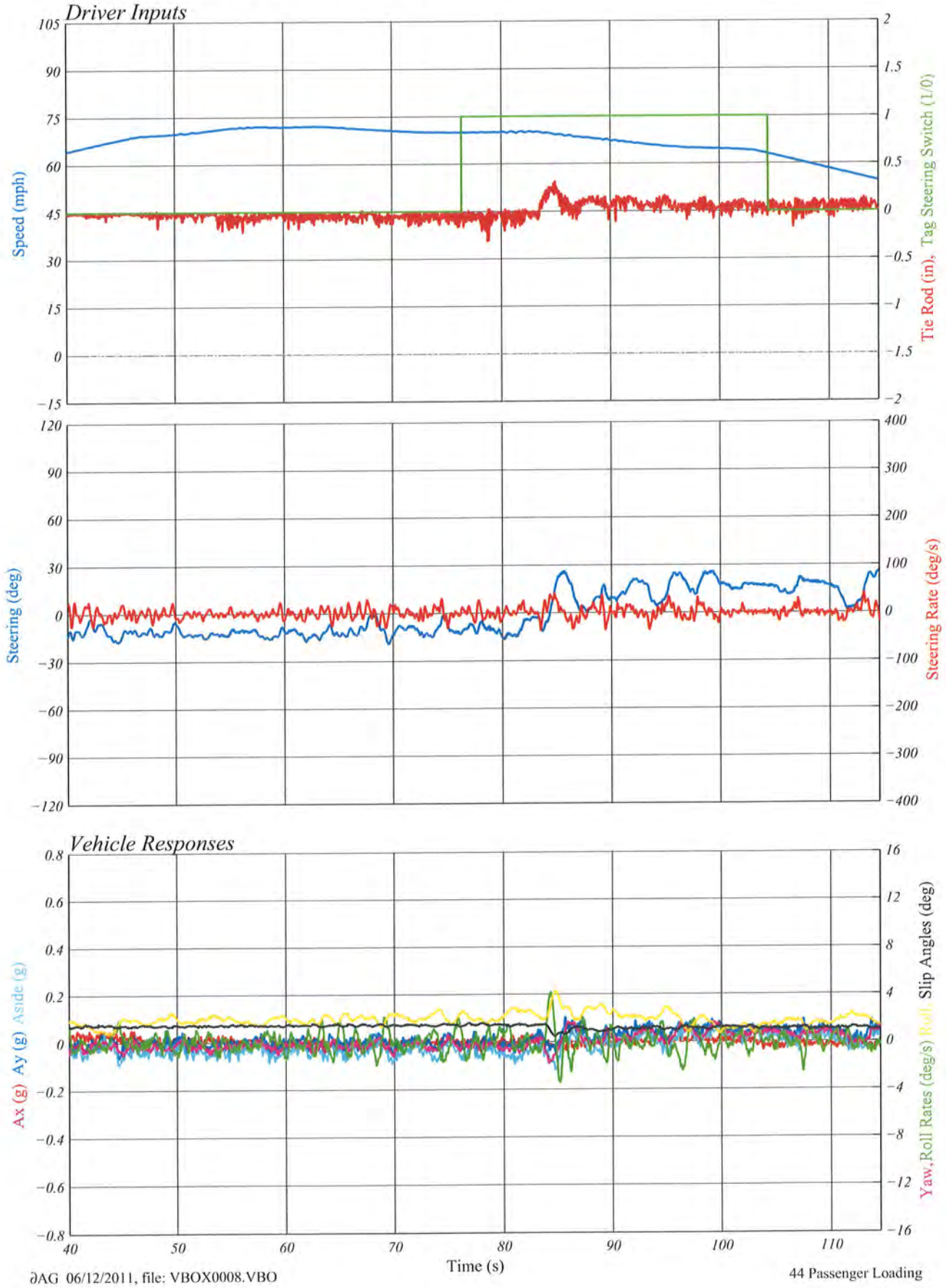
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44 Passenger Loading

Test: 7

1995 MCI 102DL3

Straight Line Drive, Dynamic Unlock



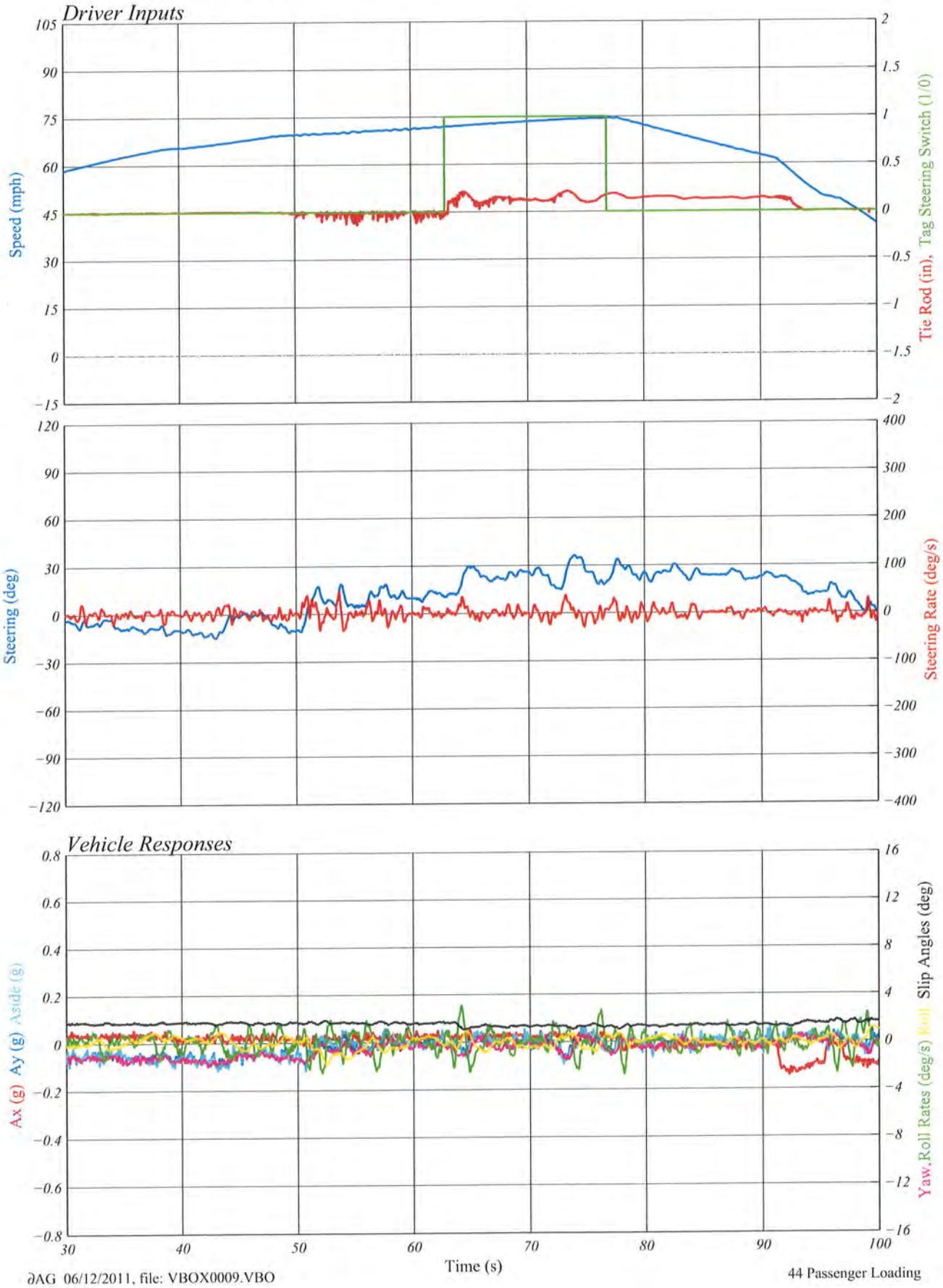
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44 Passenger Loading

Test: 8

1995 MCI 102DL3

Straight Line Drive, Dynamic Unlock



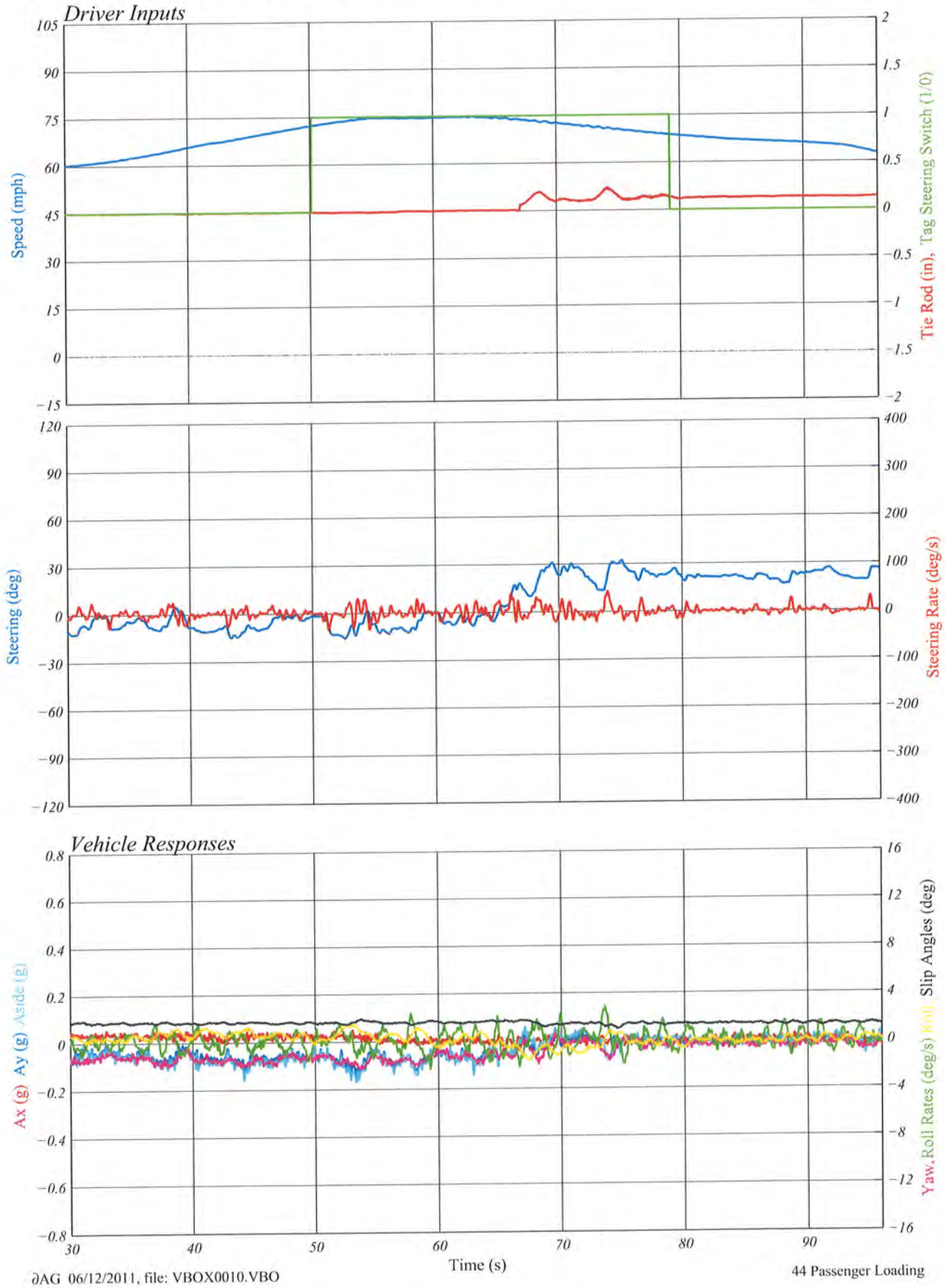
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44 Passenger Loading

Test: 9

1995 MCI 102DL3

Dynamic Unlock in a Curve, Downhill to the Left



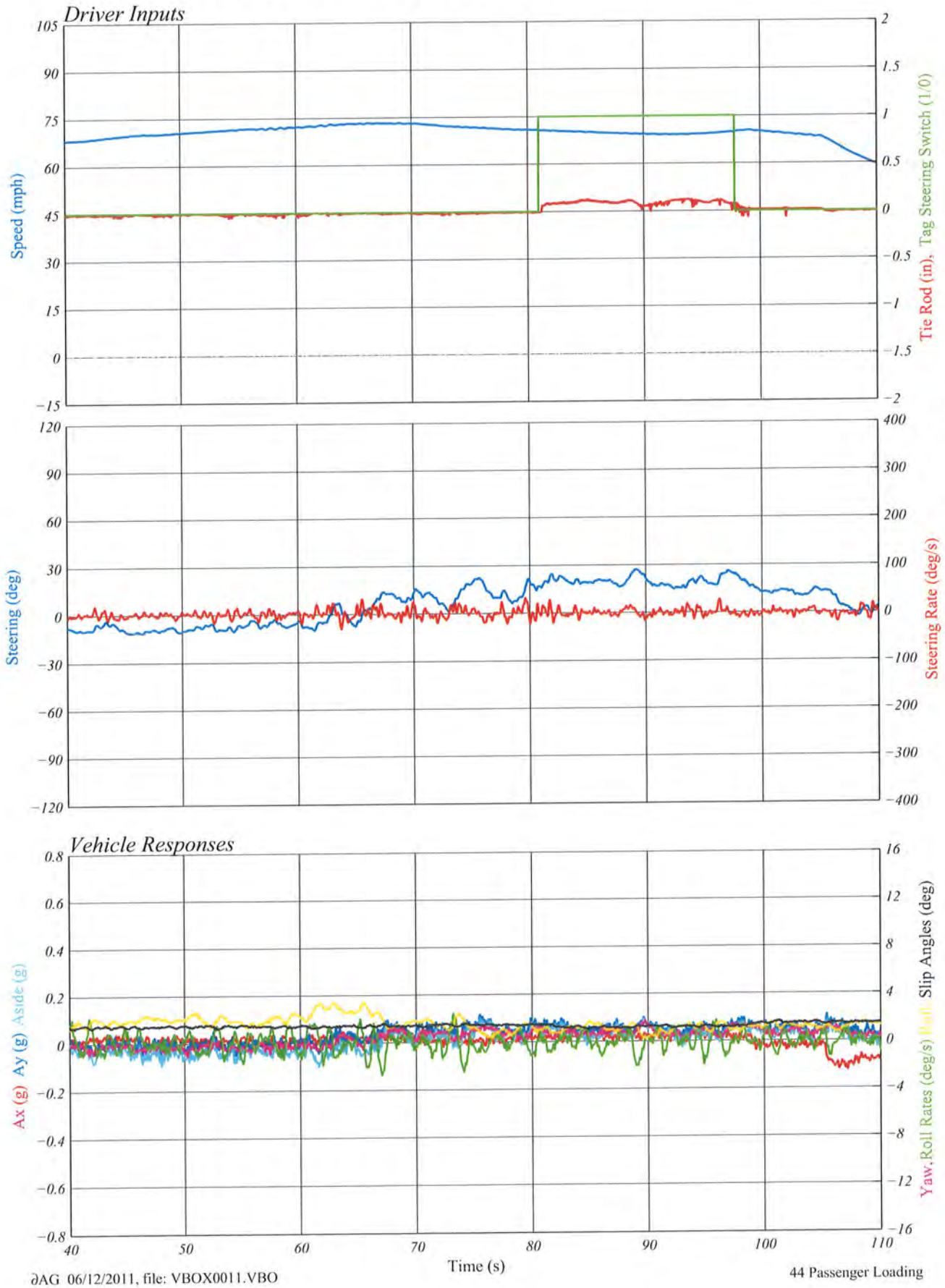
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44 Passenger Loading

Test: 10

1995 MCI 102DL3

Dynamic Unlock in a Curve, Uphill to the Right



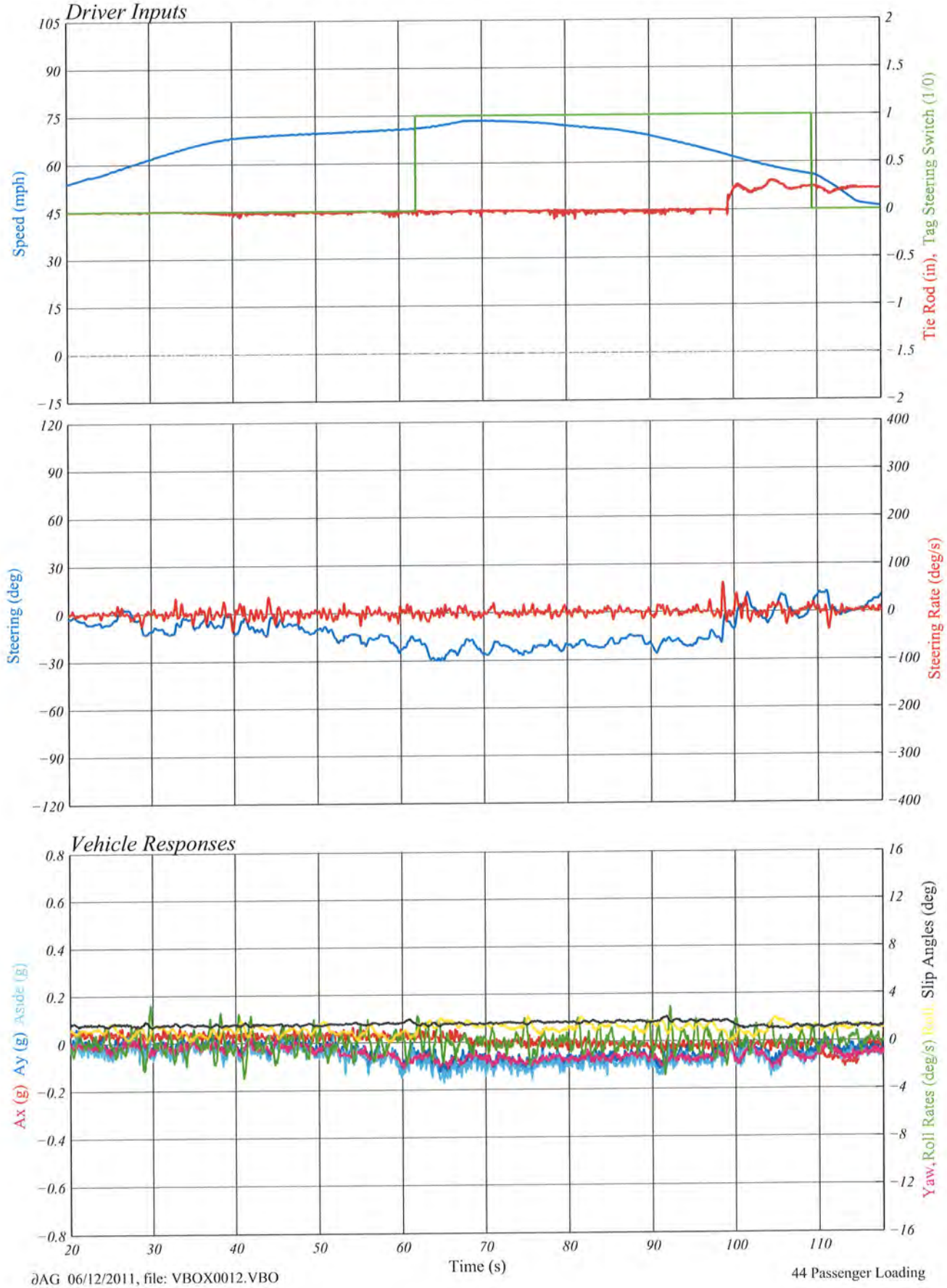
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44 Passenger Loading

Test: 11

1995 MCI 102DL3

Dynamic Unlock in a Curve, Uphill to the Left



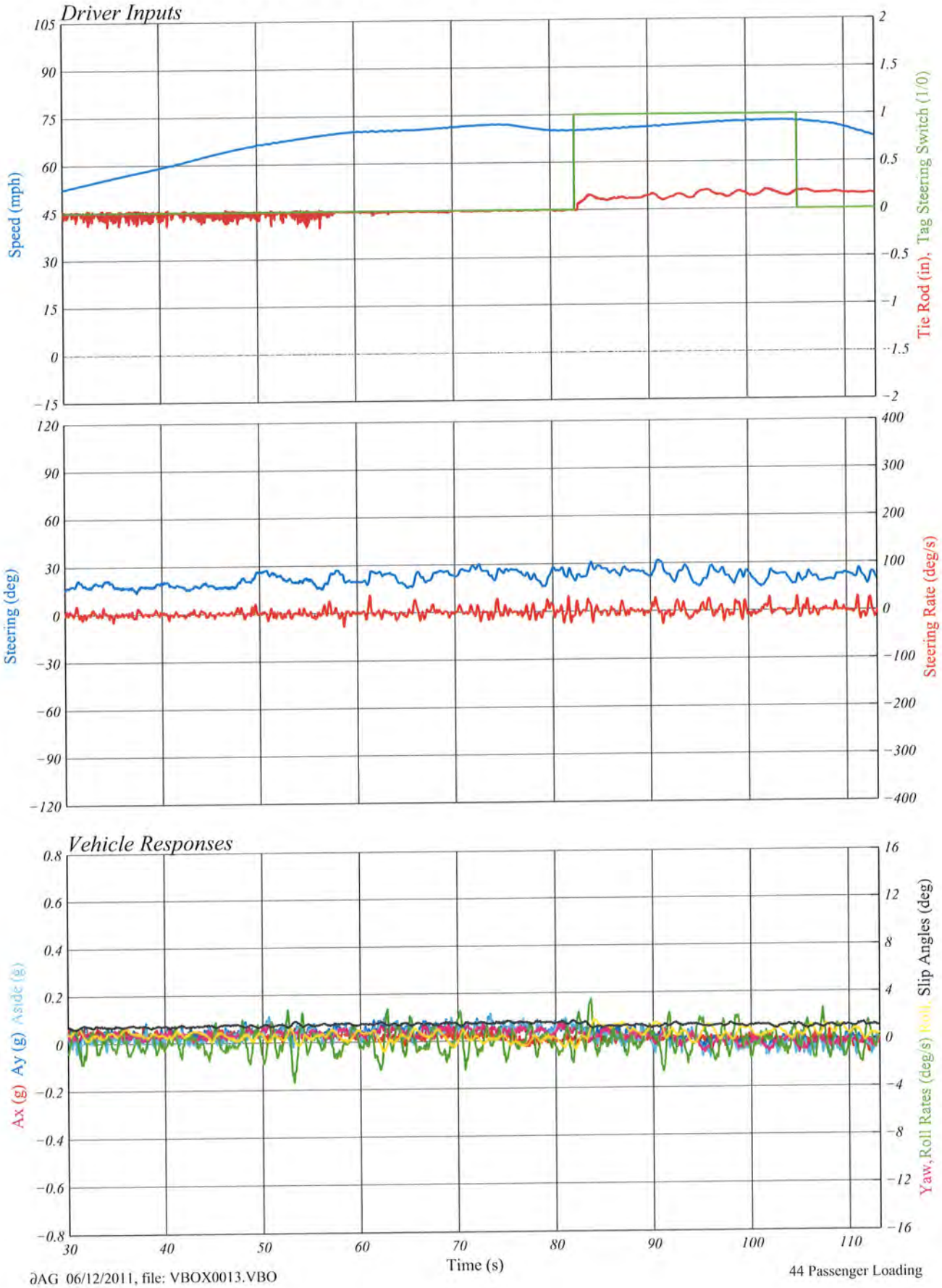
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44 Passenger Loading

Test: 12

1995 MCI 102DL3

Dynamic Unlock in a Curve, Downhill to the Right



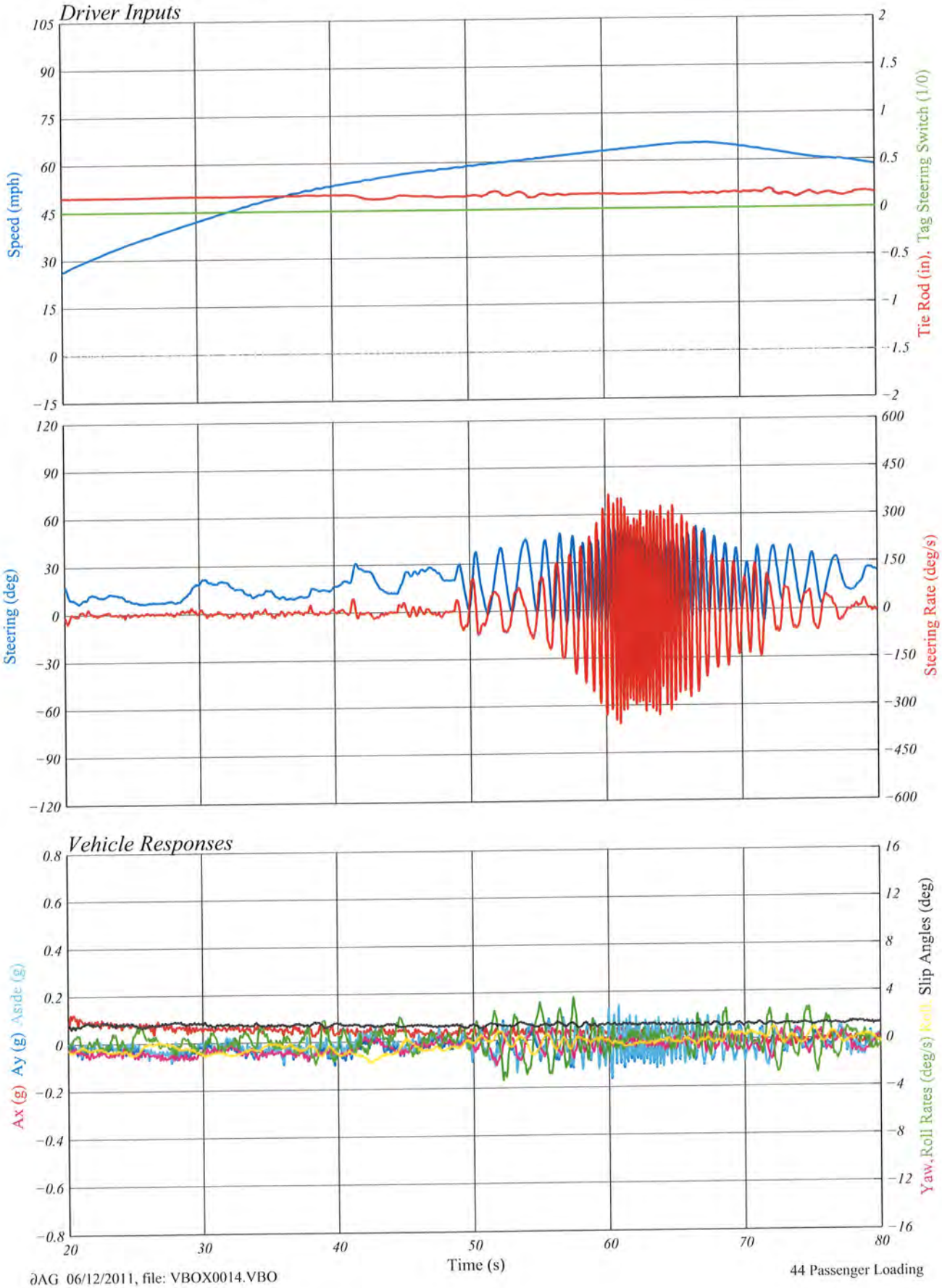
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44 Passenger Loading

Test: 13

1995 MCI 102DL3

Frequency Response, Locked



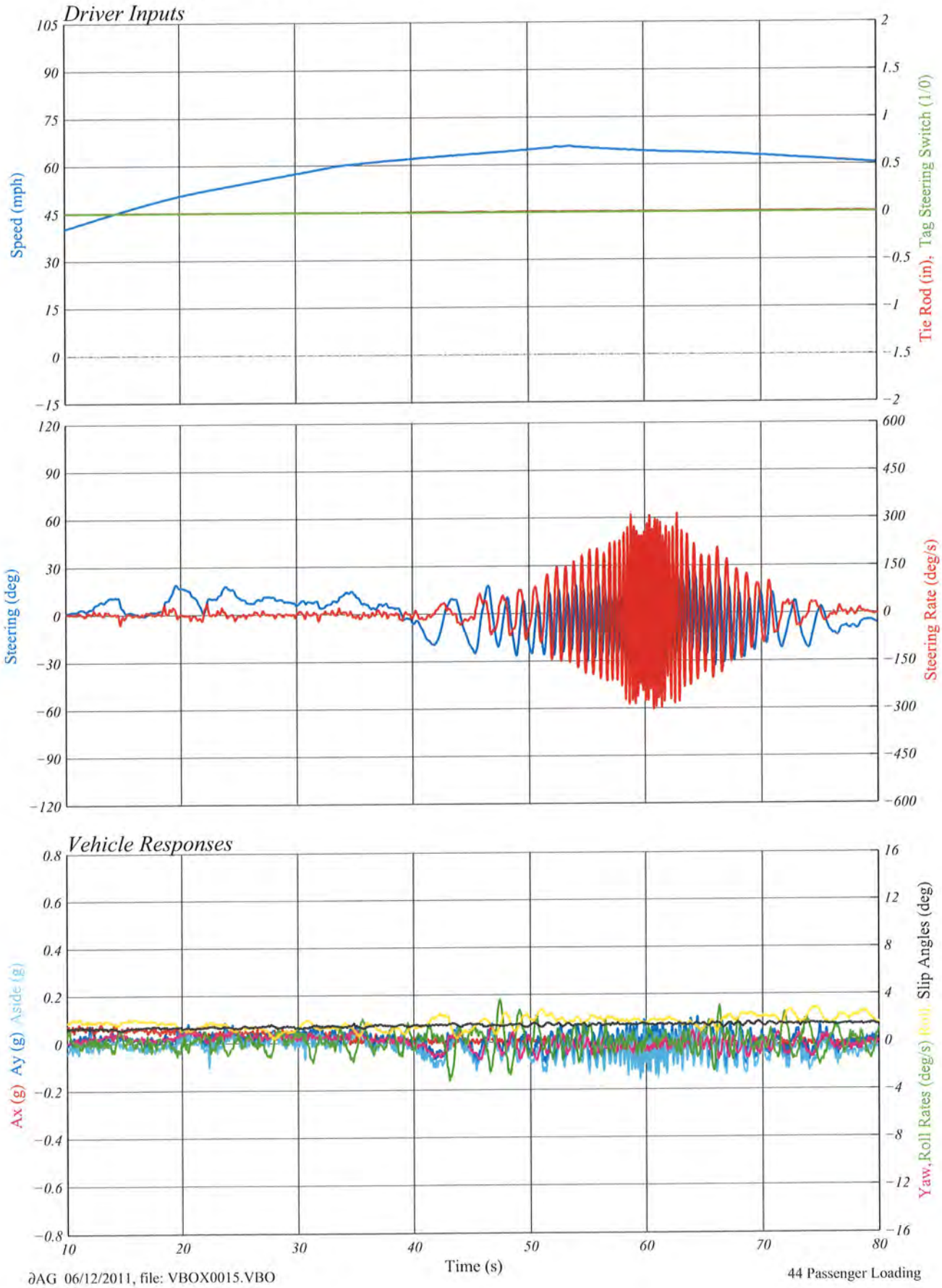
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44 Passenger Loading

Test: 14

1995 MCI 102DL3

Frequency Response, Locked



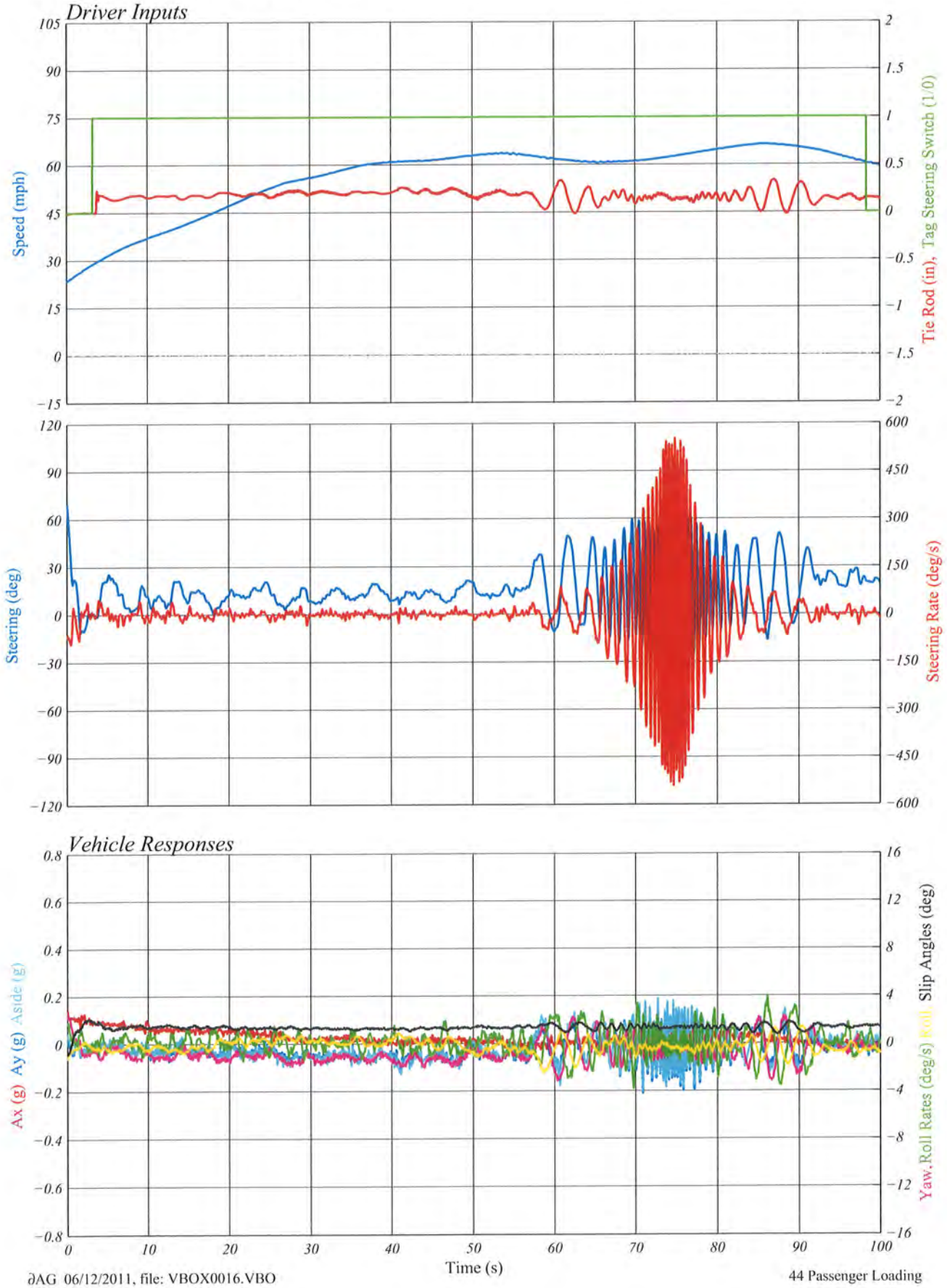
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44 Passenger Loading

Test: 15

1995 MCI 102DL3

Frequency Response, Unlocked



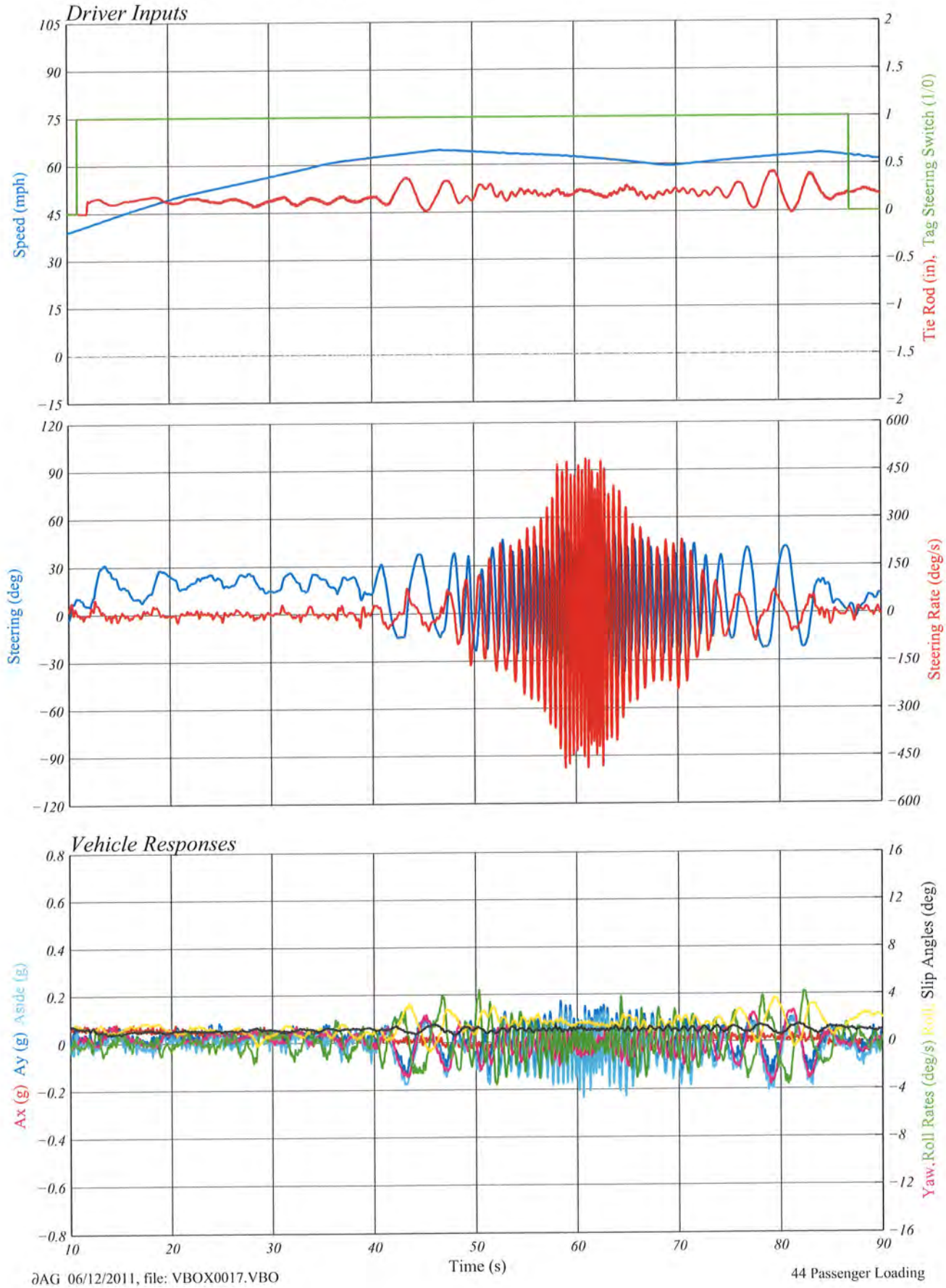
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44 Passenger Loading

Test: 16

1995 MCI 102DL3

Frequency Response, Unlocked



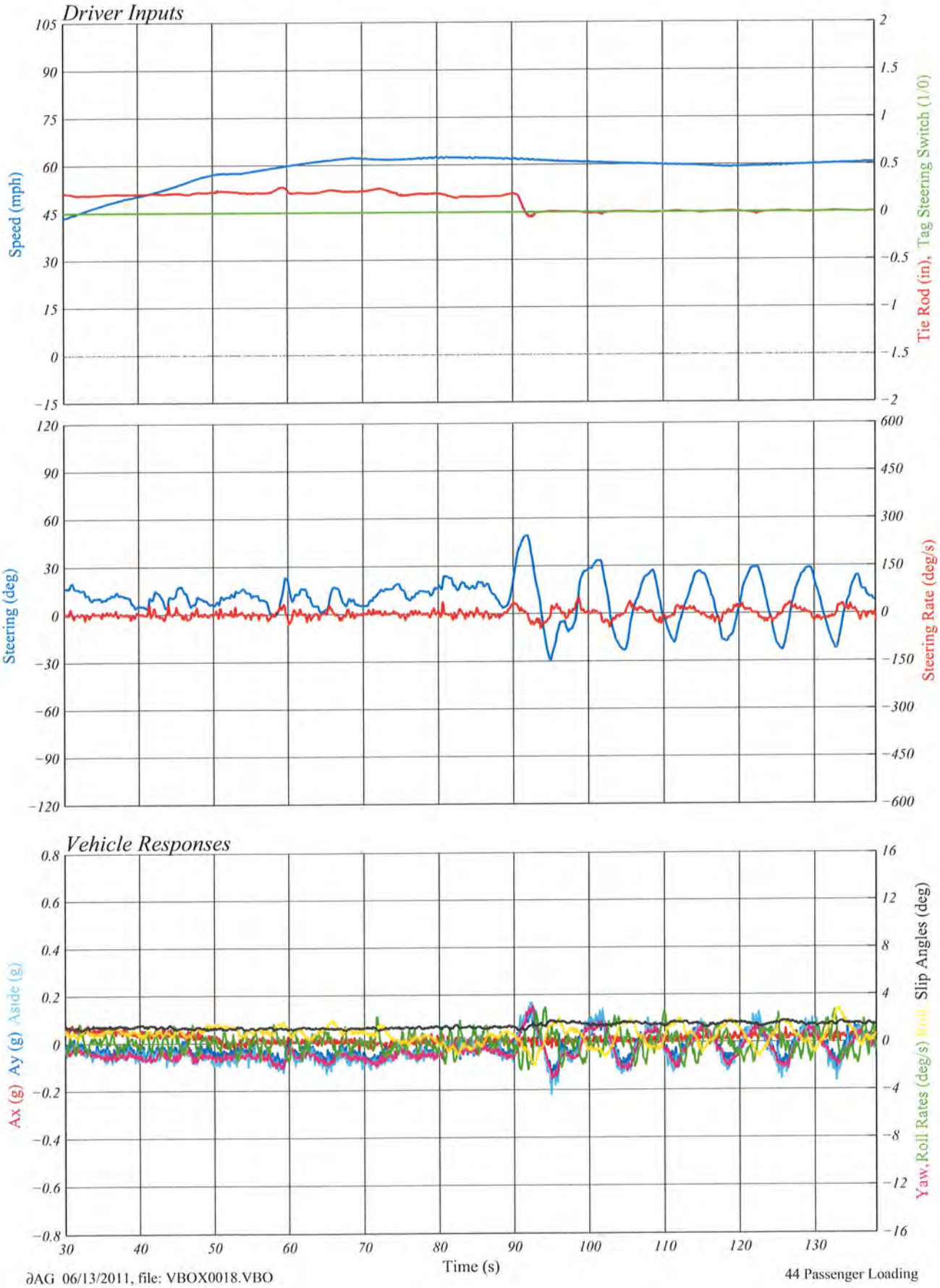
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44 Passenger Loading

Test: 17

1995 MCI 102DL3

On–Center Handling, Locked



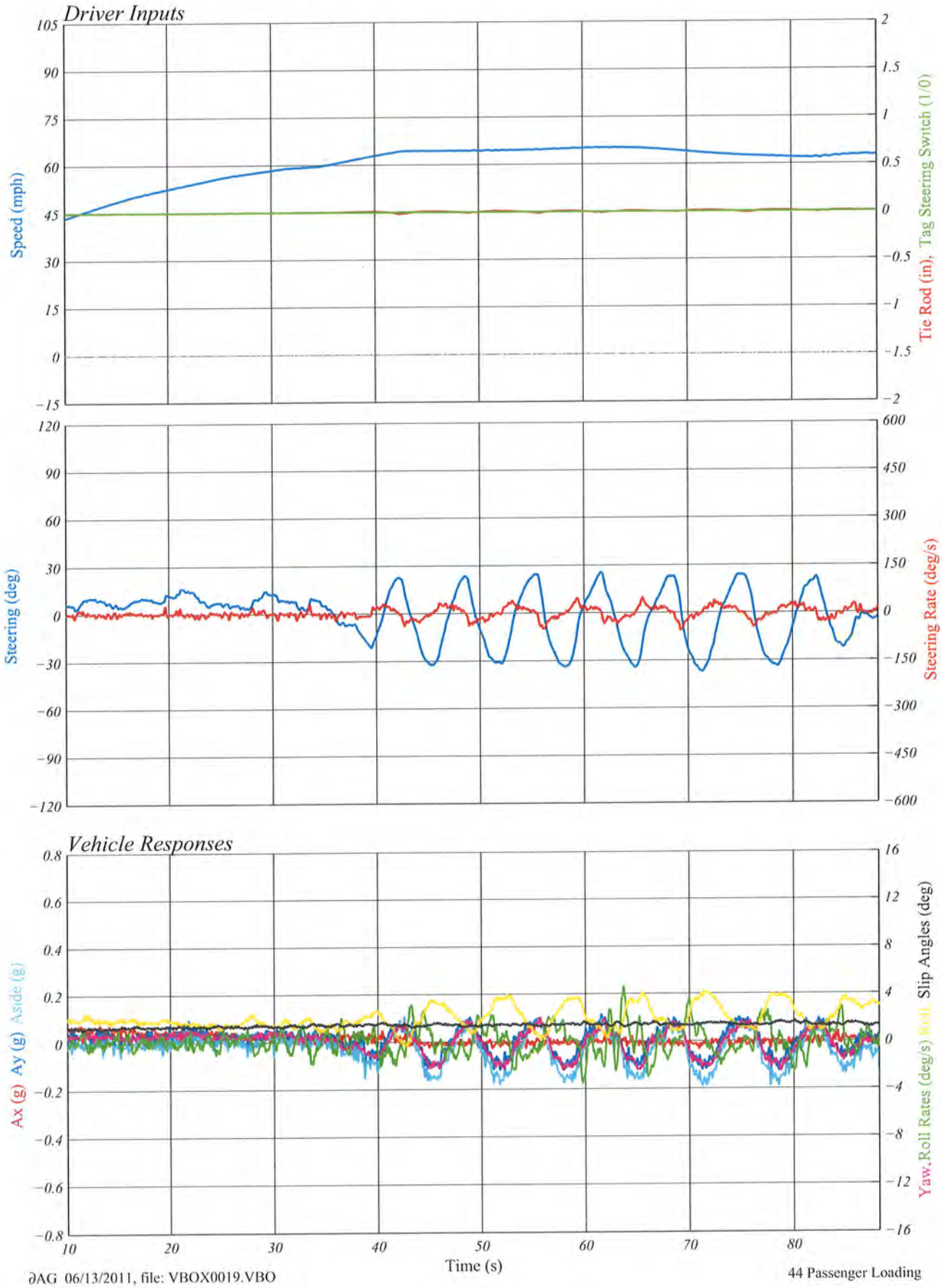
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44 Passenger Loading

Test: 18

1995 MCI 102DL3

On–Center Handling, Locked



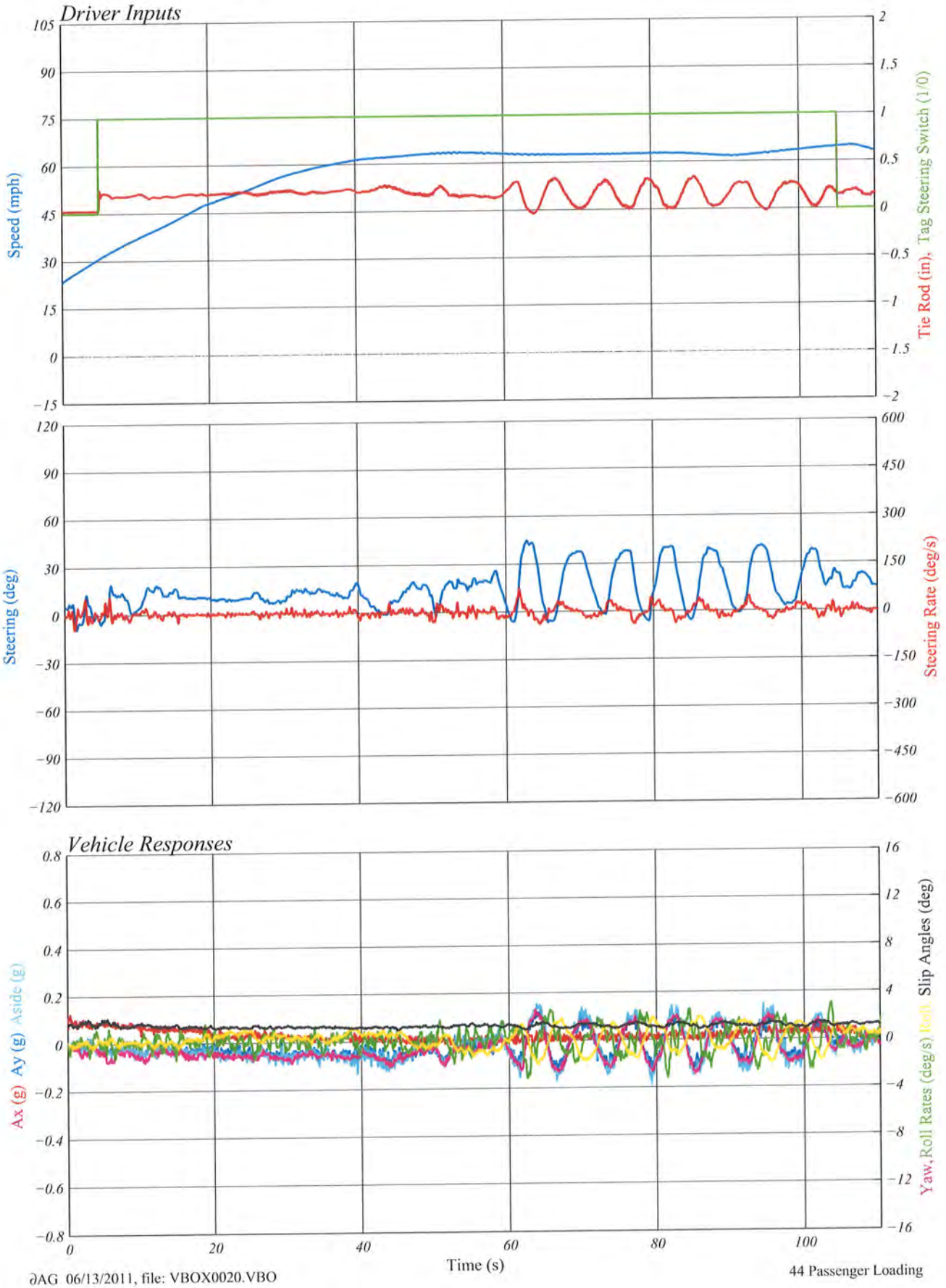
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44 Passenger Loading

Test: 19

1995 MCI 102DL3

On–Center Handling, Unlocked



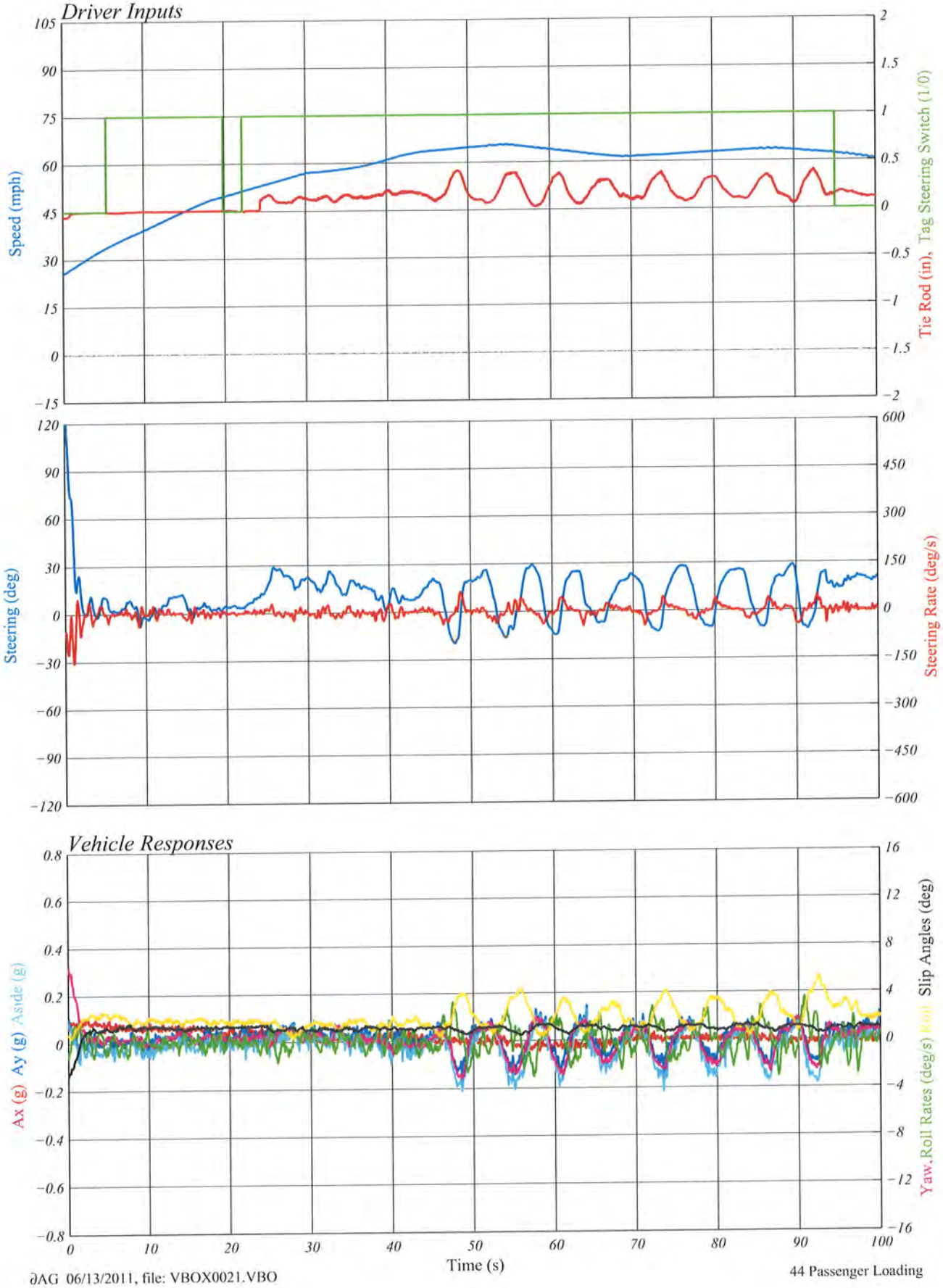
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44 Passenger Loading

Test: 20

1995 MCI 102DL3

On−Center Handling, Unlocked



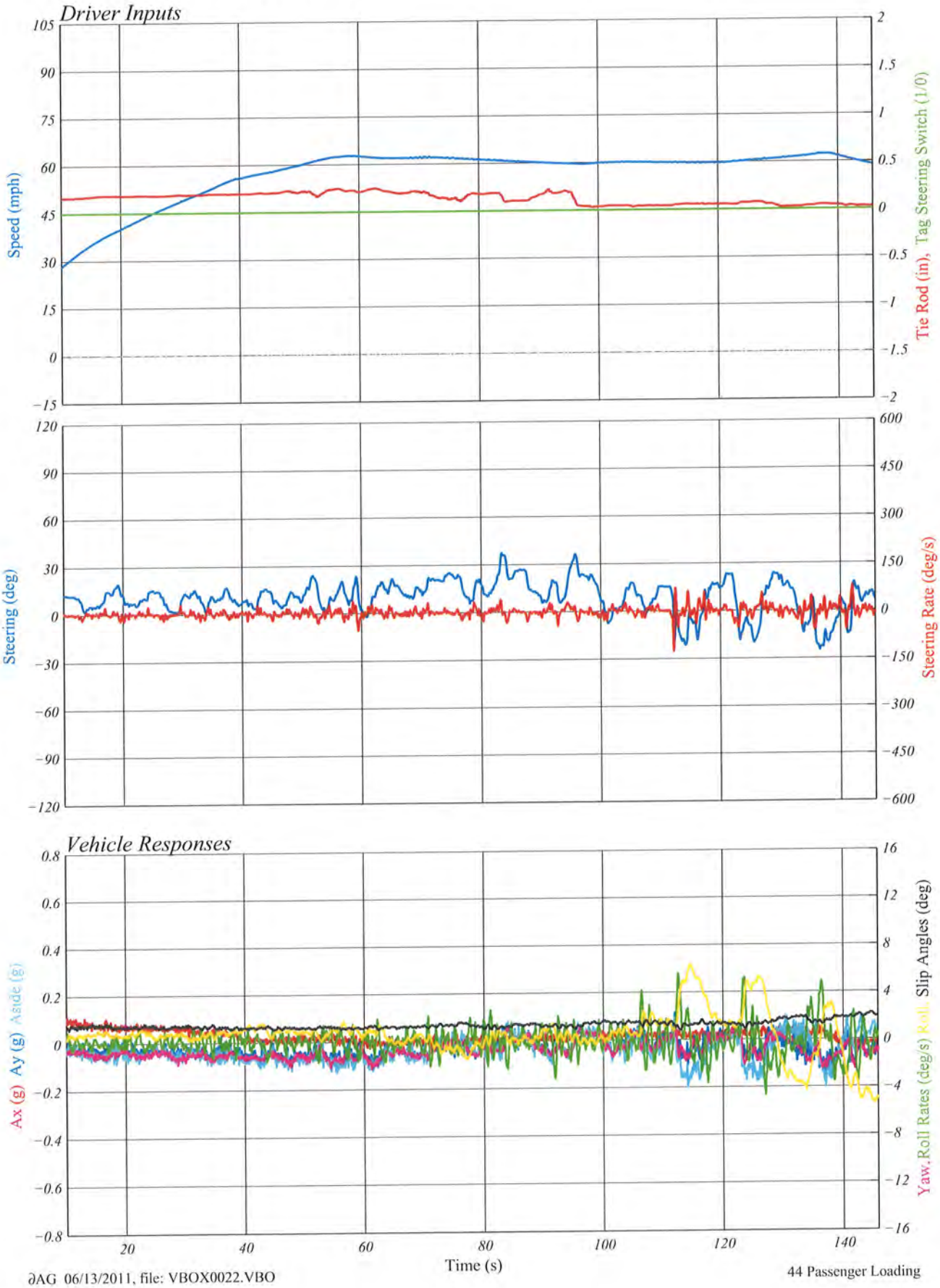
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44 Passenger Loading

Test: 21

1995 MCI 102DL3

Road Edge & Crown, Locked



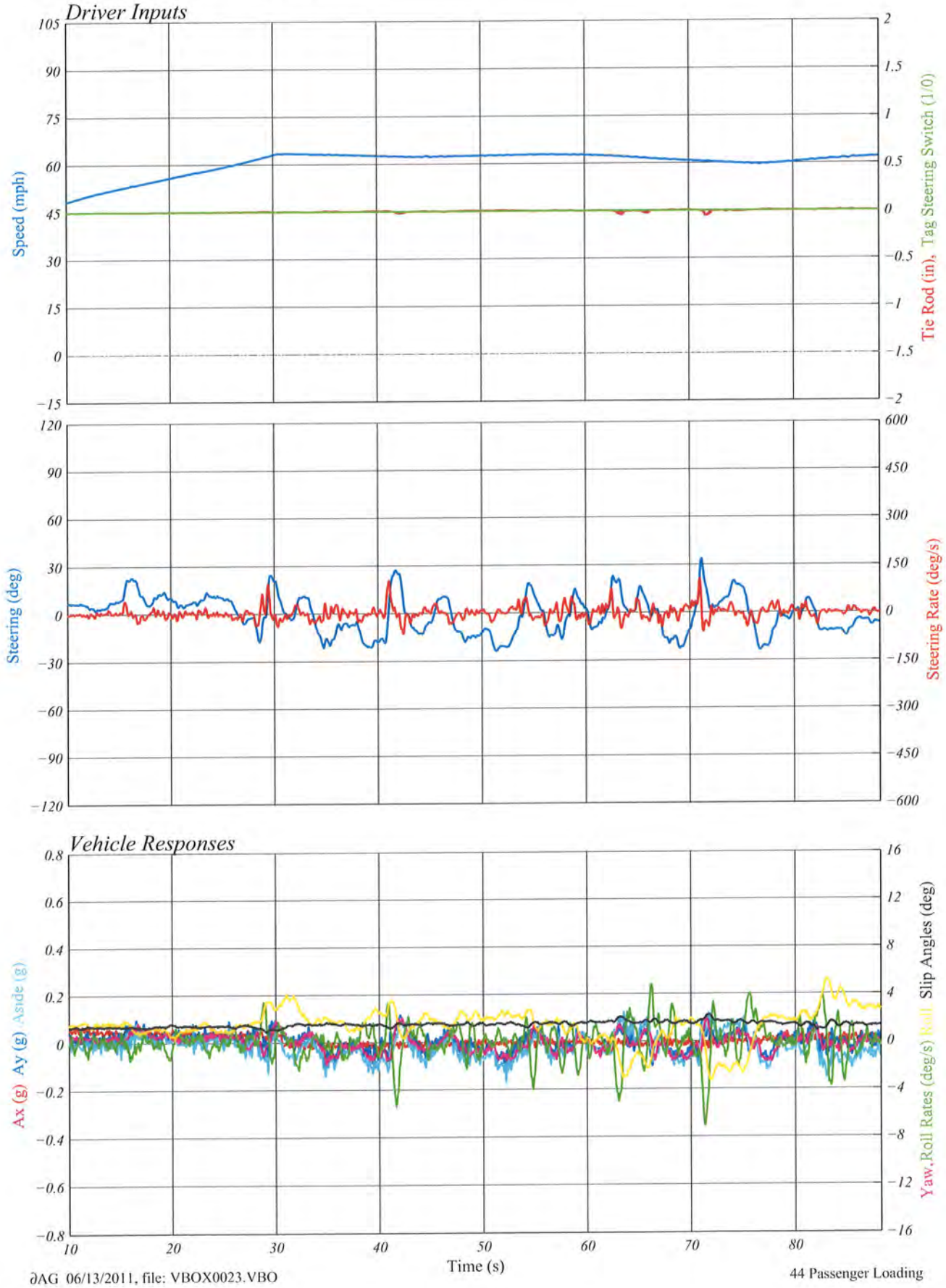
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44 Passenger Loading

Test: 22

1995 MCI 102DL3

Road Edge & Crown, Locked



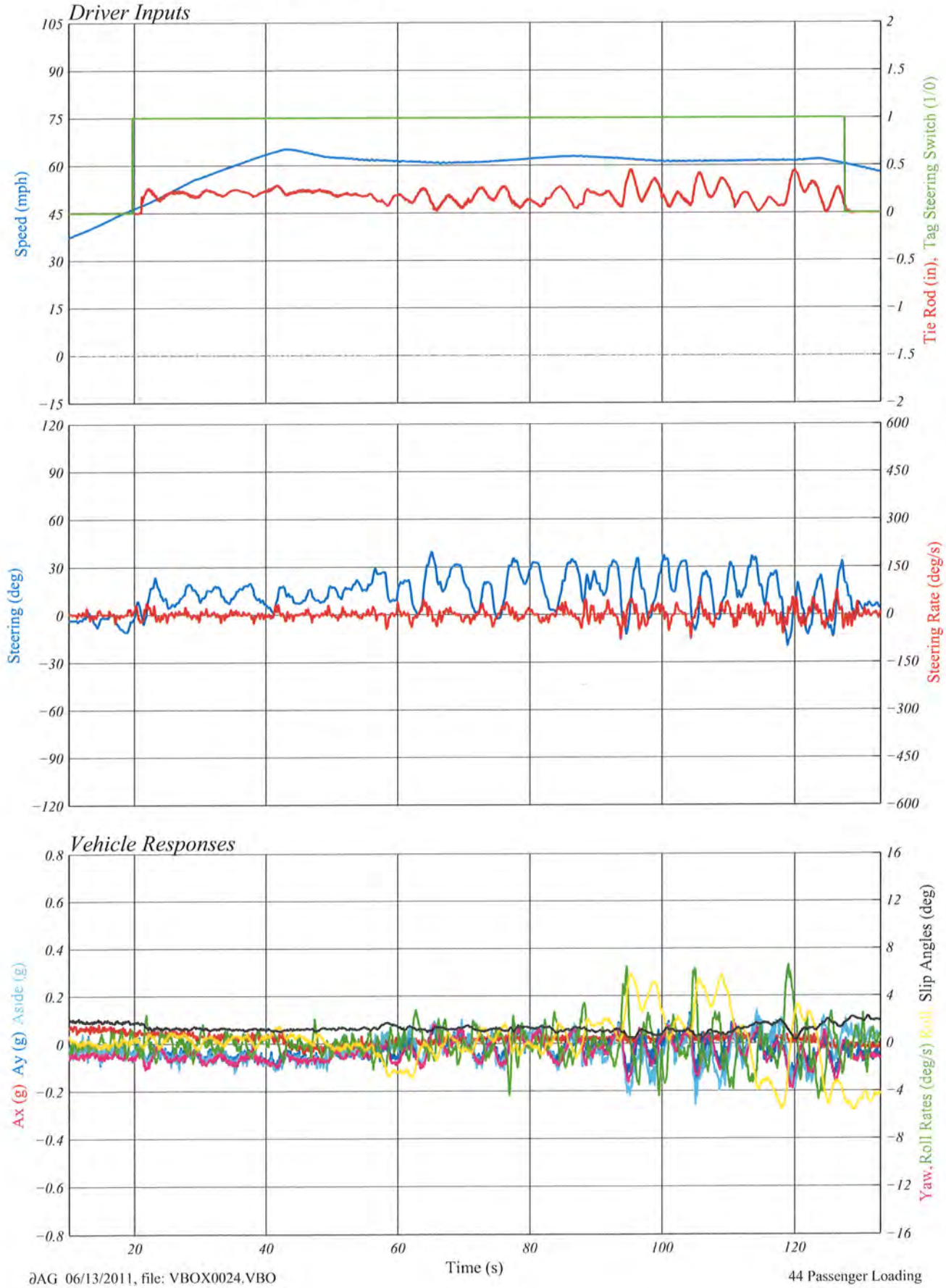
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44 Passenger Loading

Test: 23

1995 MCI 102DL3

Road Edge & Crown, Unlocked



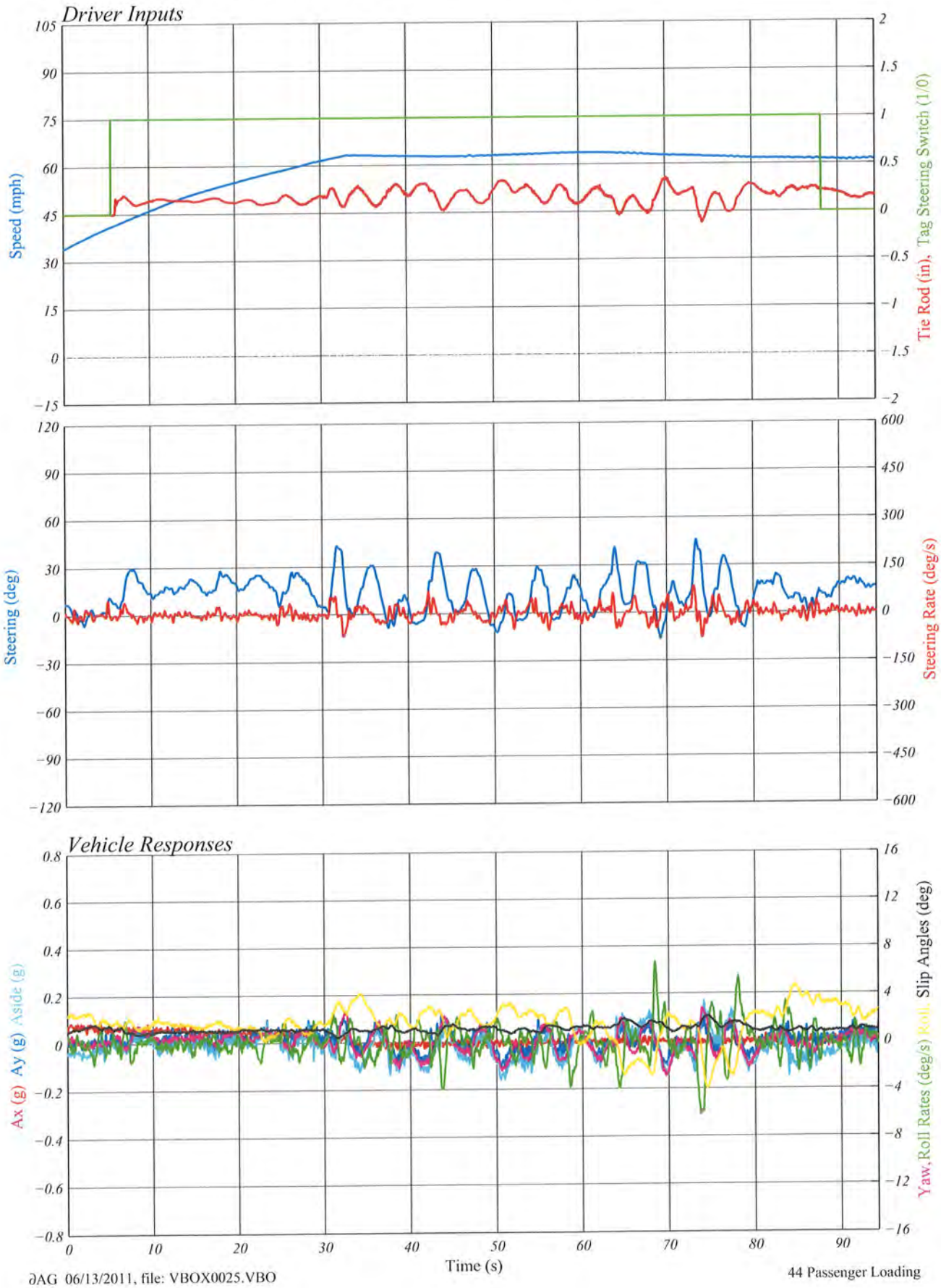
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44 Passenger Loading

Test: 24

1995 MCI 102DL3

Road Edge & Crown, Unlocked



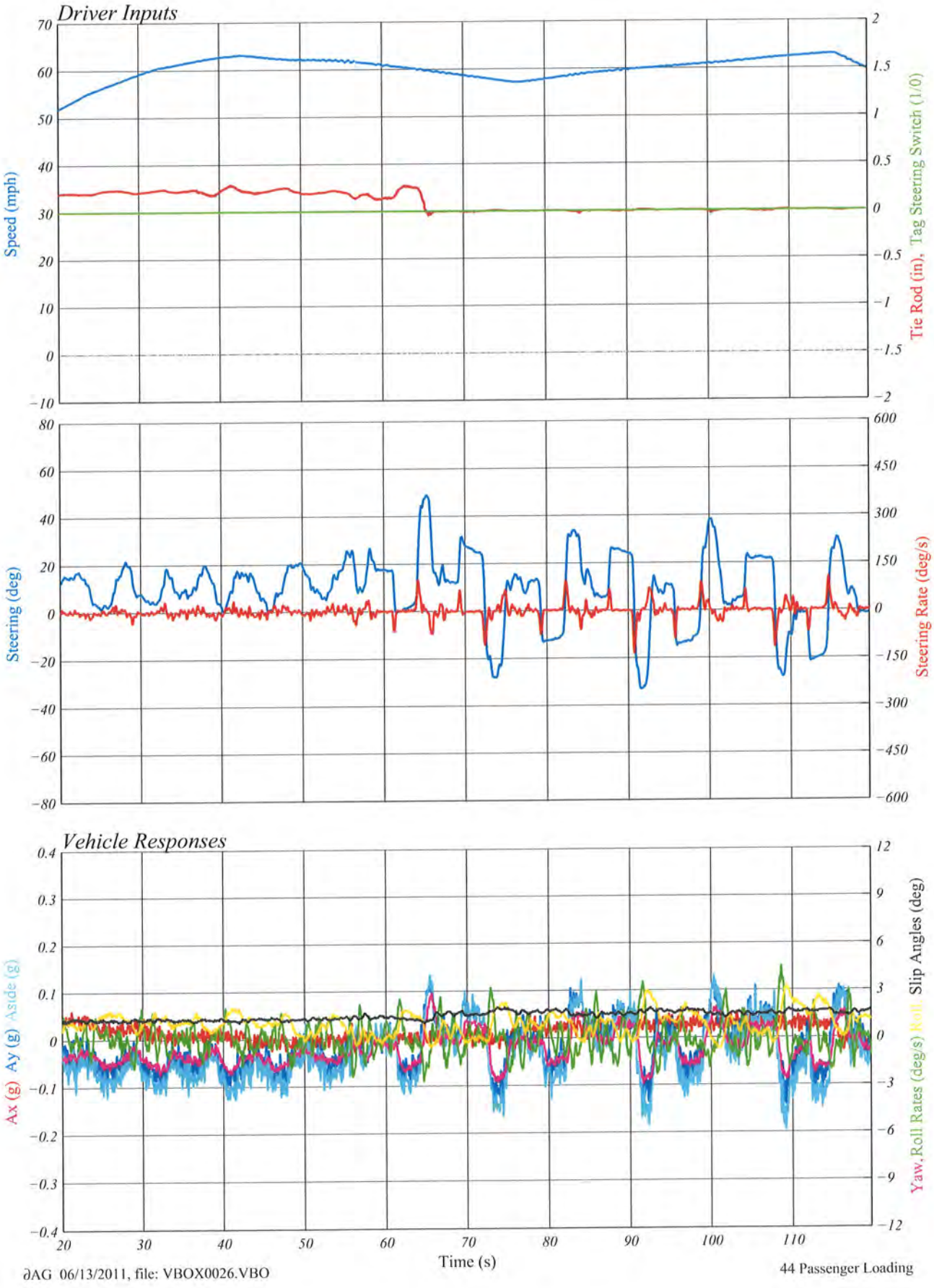
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44 Passenger Loading

Test: 25

1995 MCI 102DL3

Low−g Step Steer, Locked



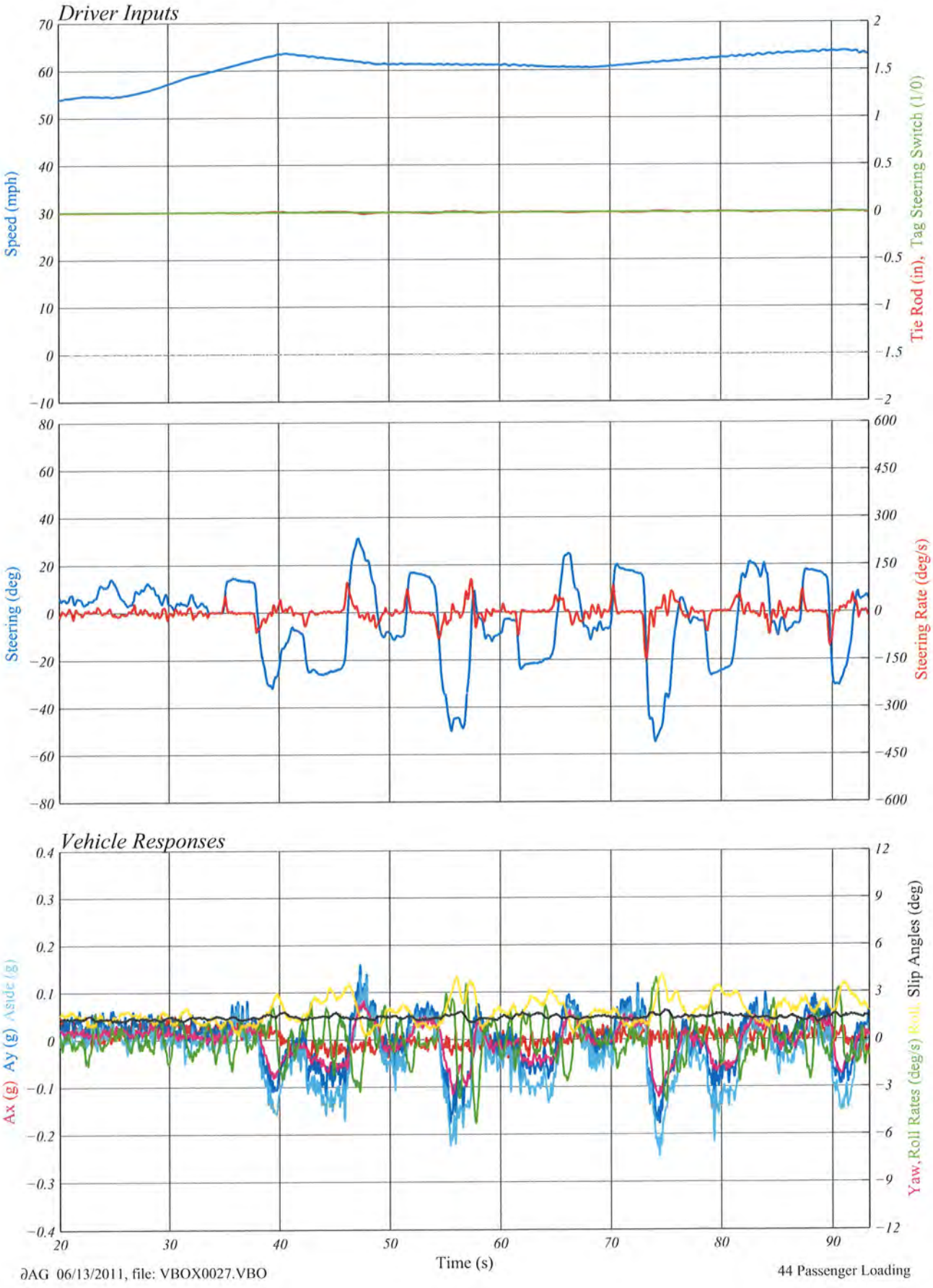
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44 Passenger Loading

Test: 26

1995 MCI 102DL3

Low−g Step Steer, Locked



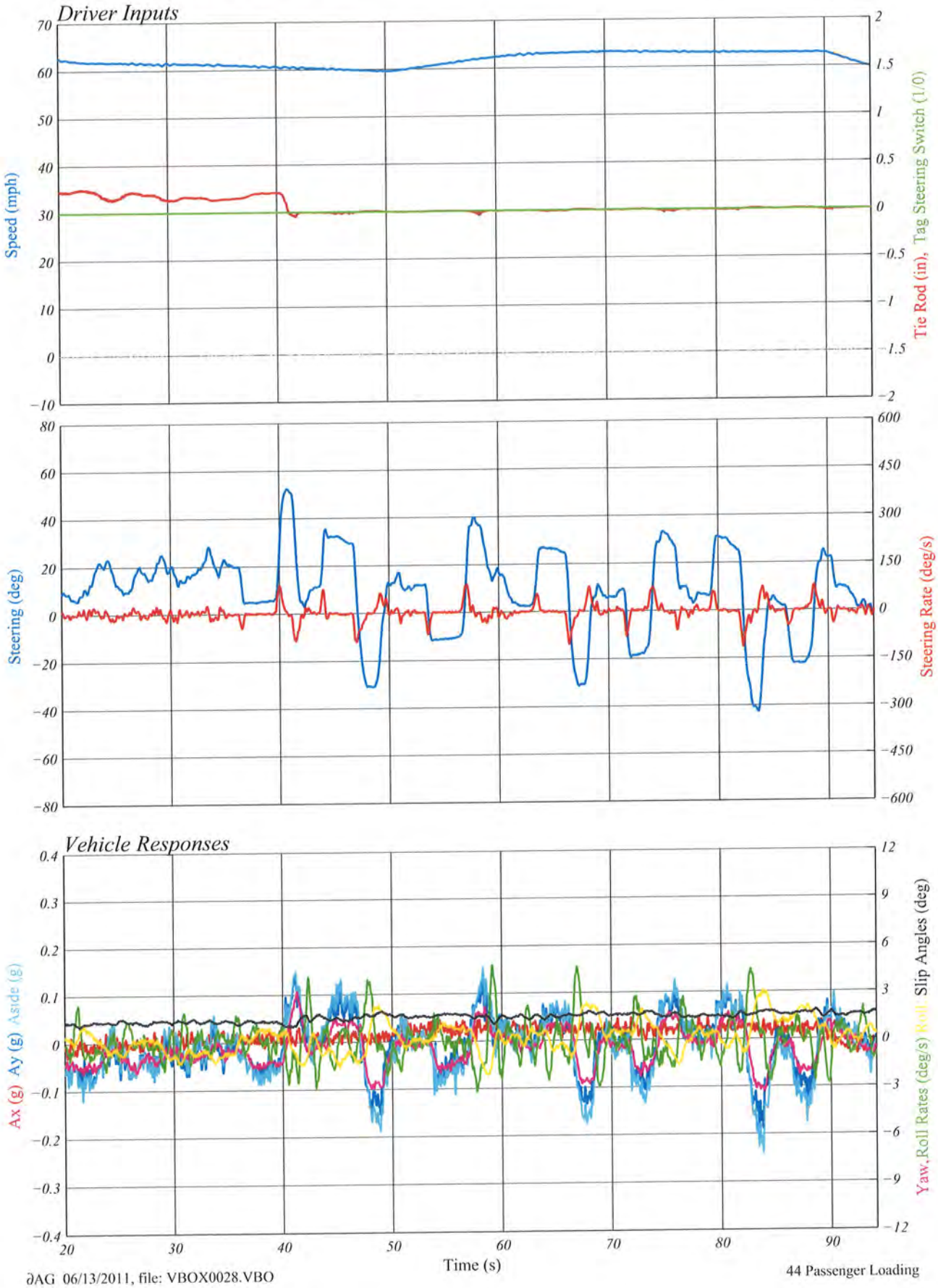
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44 Passenger Loading

Test: 27

1995 MCI 102DL3

Low–g Step Steer, Locked



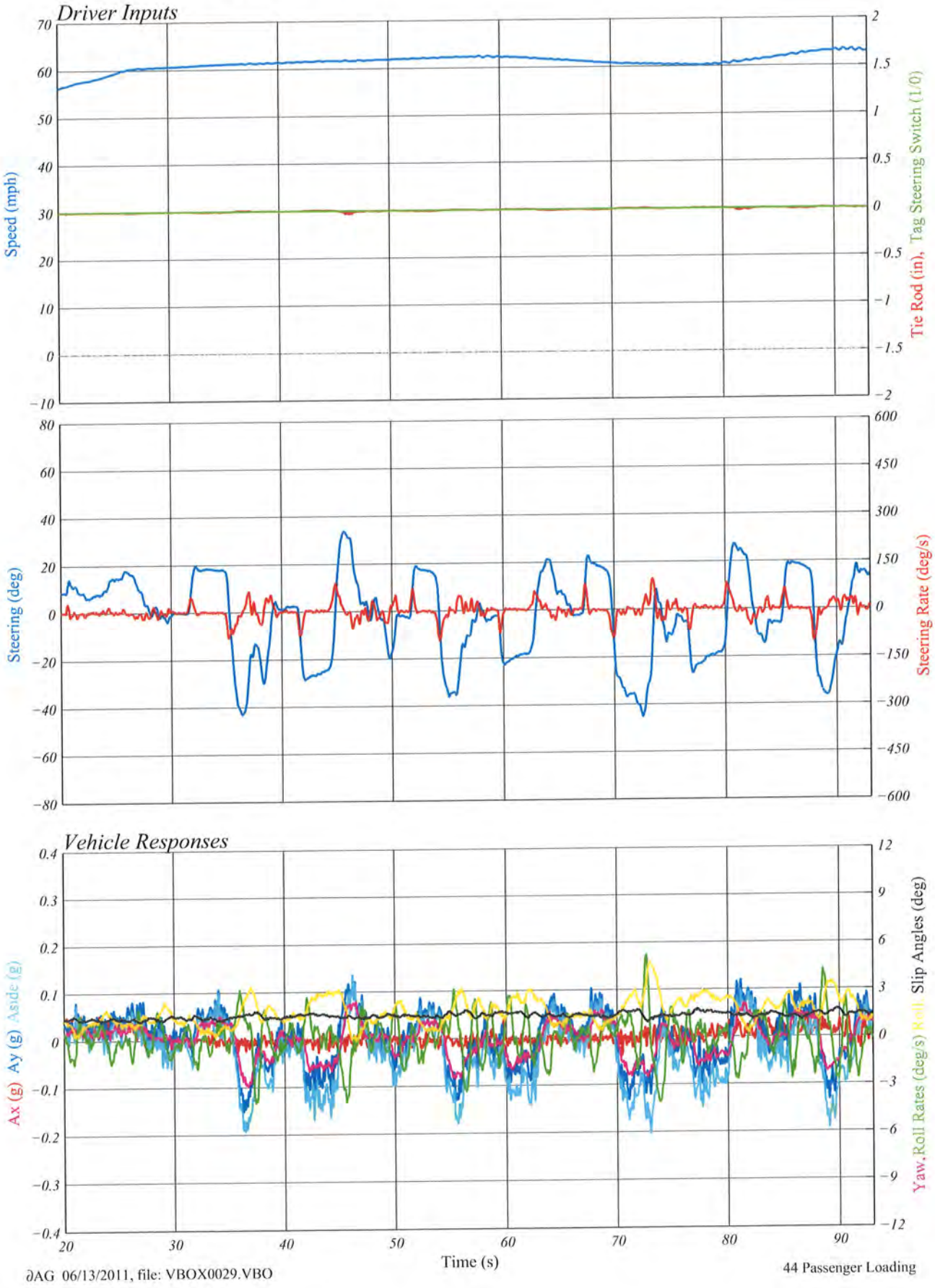
∂AG 06/13/2011, file: VBOX0028.VBO

44 Passenger Loading

Test: 28

1995 MCI 102DL3

Low−g Step Steer, Locked



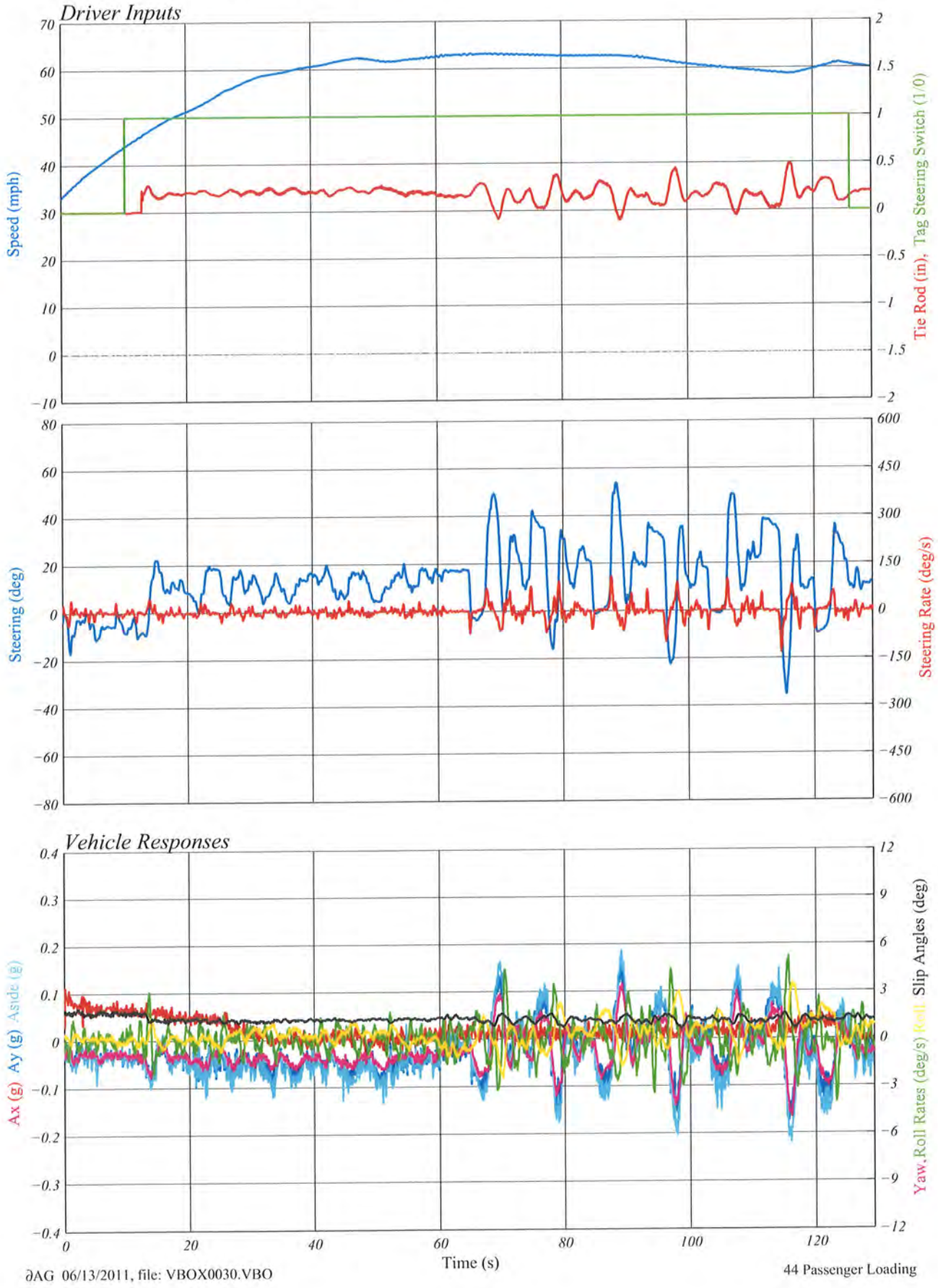
∂AG 06/13/2011, file: VBOX0029.VBO

44 Passenger Loading

Test: 29

1995 MCI 102DL3

Low−g Step Steer, Unlocked



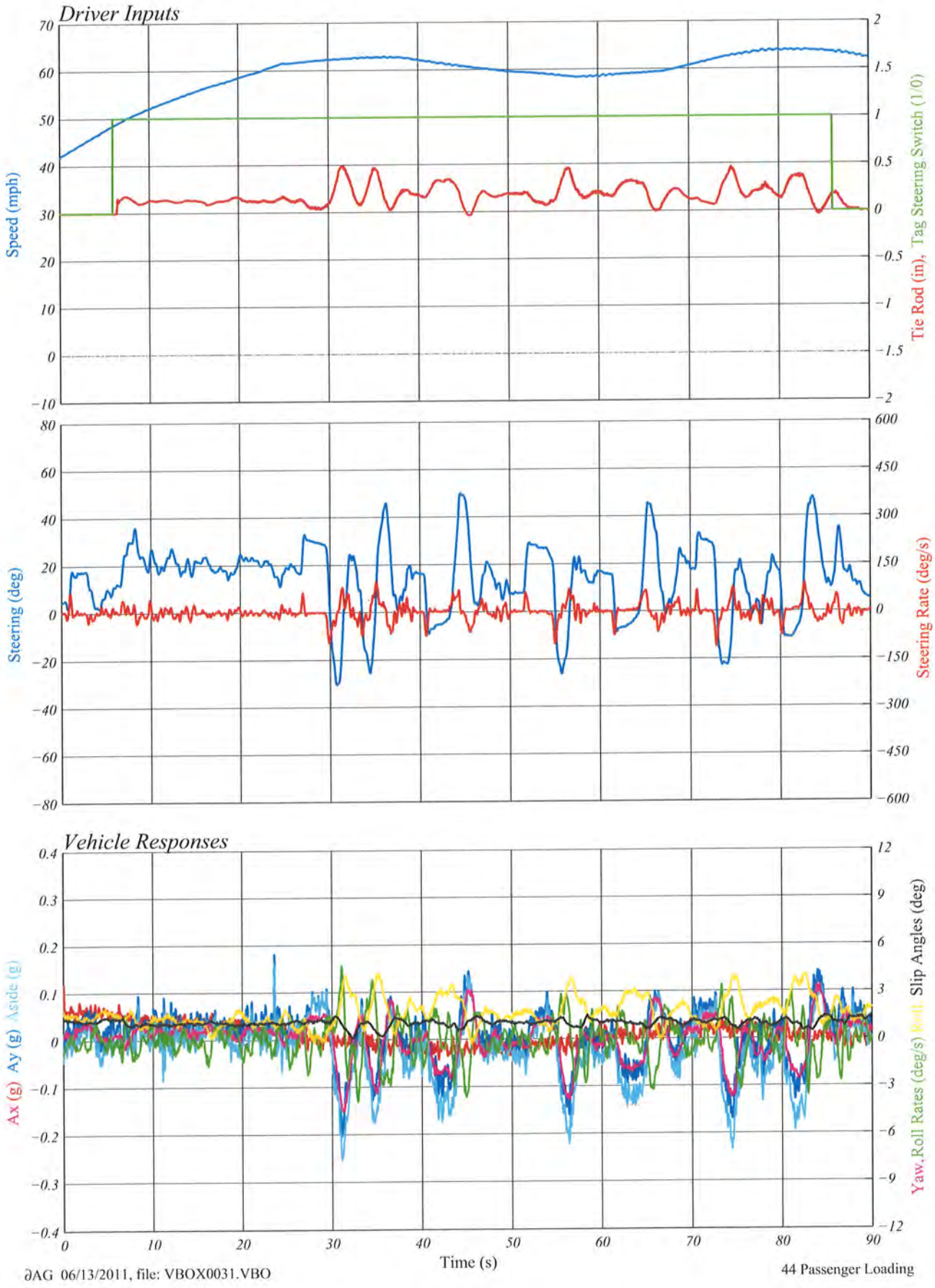
∂AG 06/13/2011, file: VBOX0030.VBO

44 Passenger Loading

Test: 30

1995 MCI 102DL3

Low−g Step Steer, Unlocked



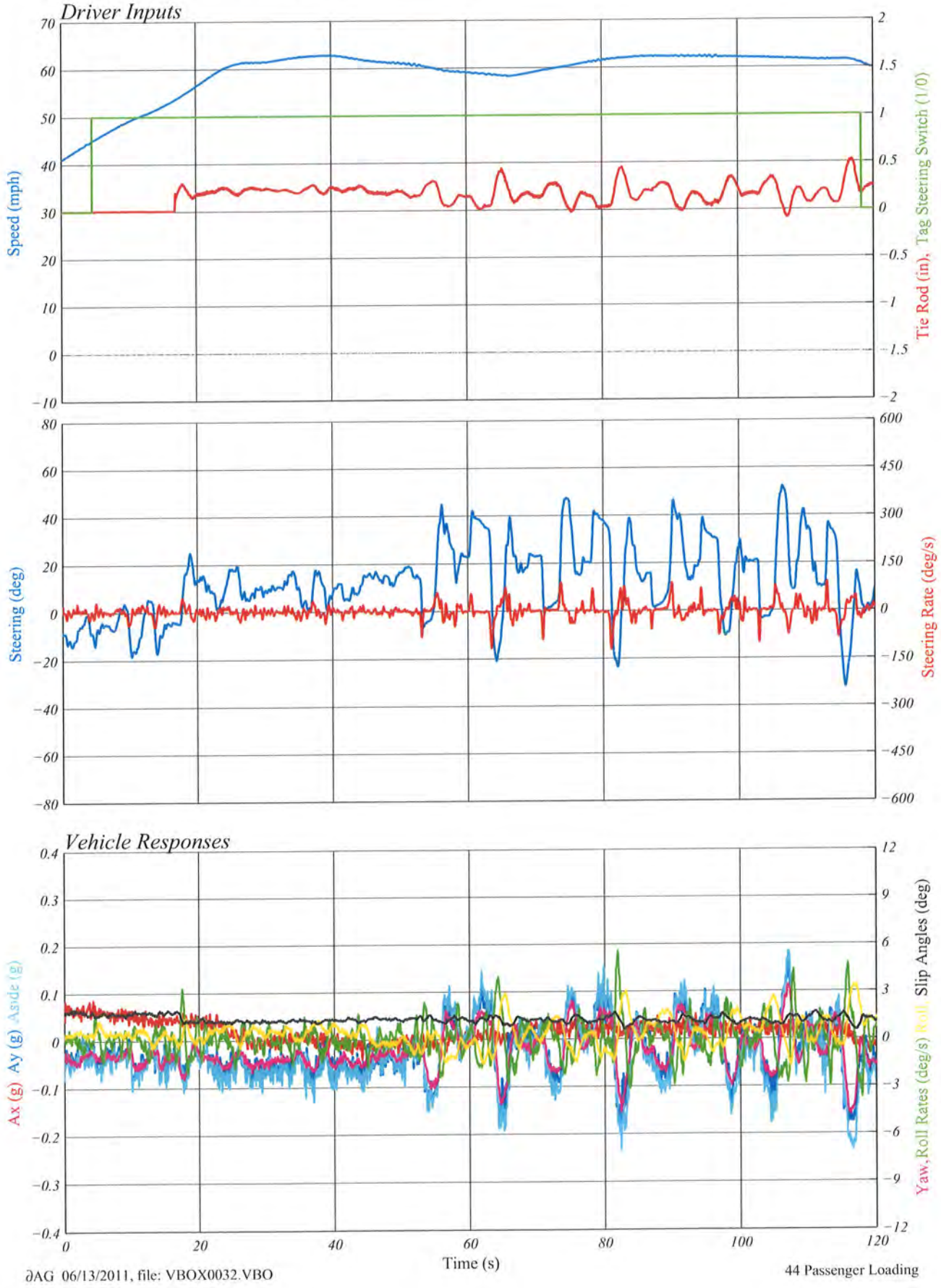
∂AG 06/13/2011, file: VBOX0031.VBO

44 Passenger Loading

Test: 31

1995 MCI 102DL3

Low−g Step Steer, Unlocked



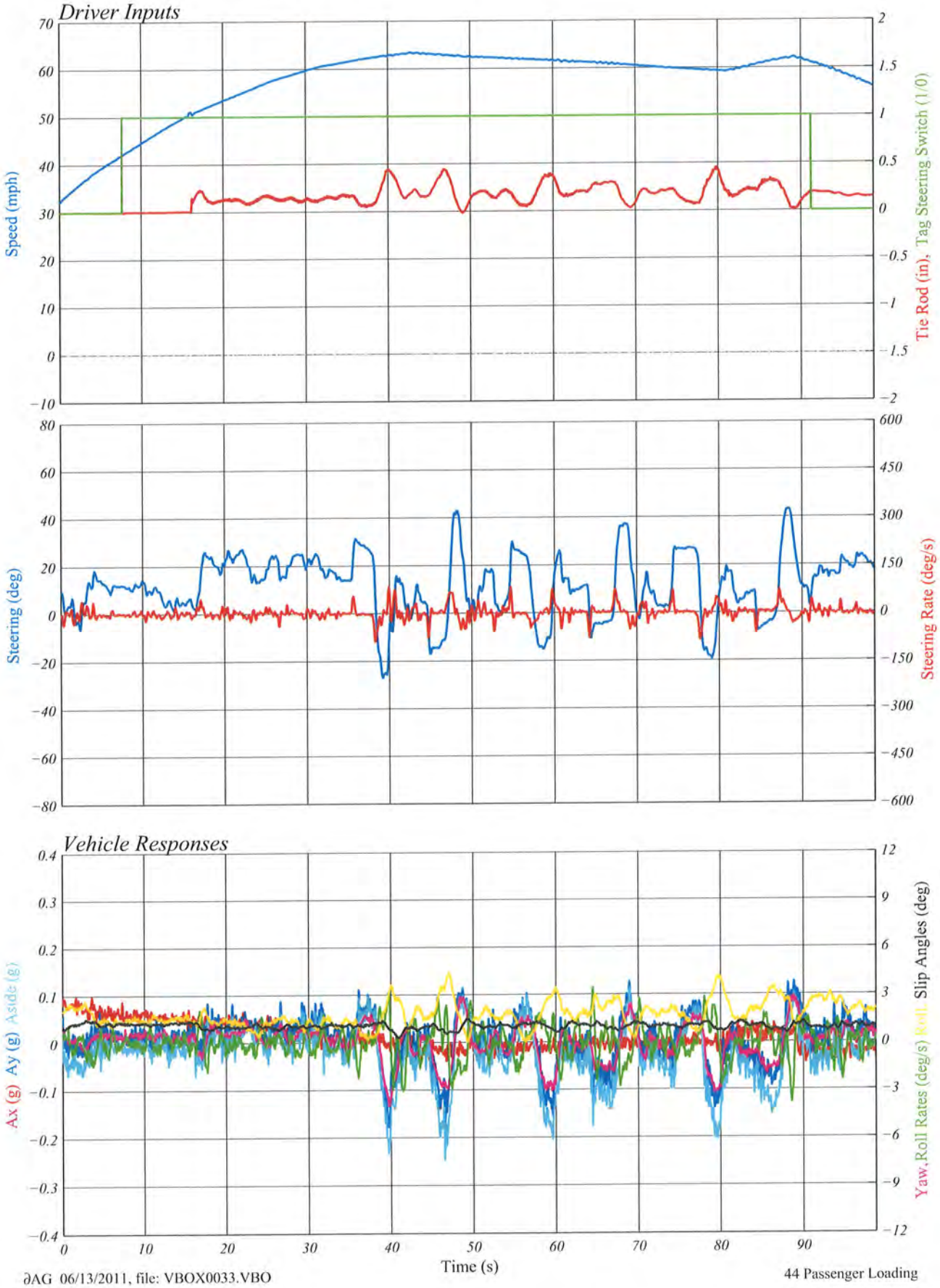
∂AG 06/13/2011, file: VBOX0032.VBO

44 Passenger Loading

Test: 32

1995 MCI 102DL3

Low−g Step Steer, Unlocked



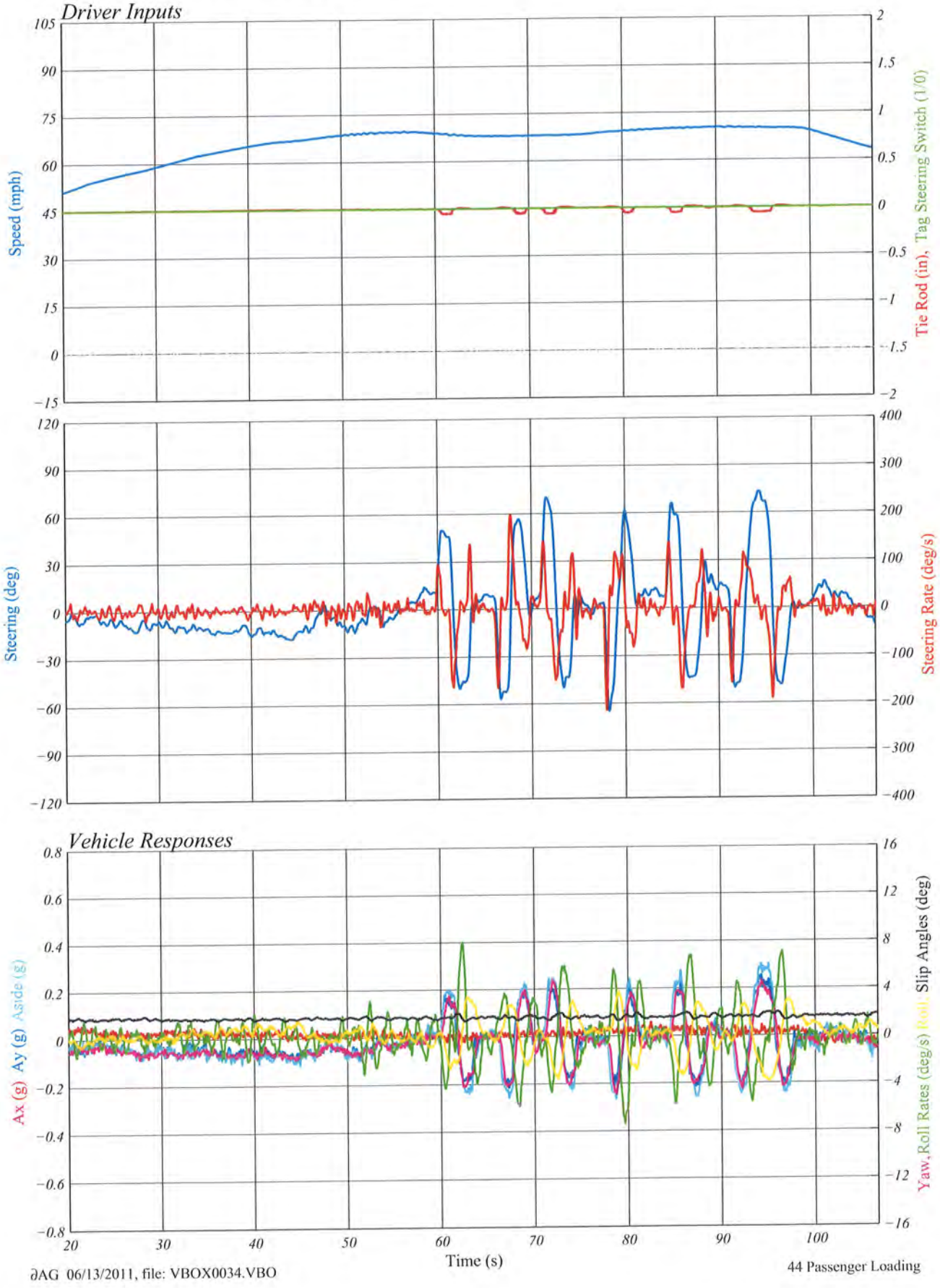
∂AG 06/13/2011, file: VBOX0033.VBO

44 Passenger Loading

Test: 33

1995 MCI 102DL3

Open Loop Lane Change, Locked



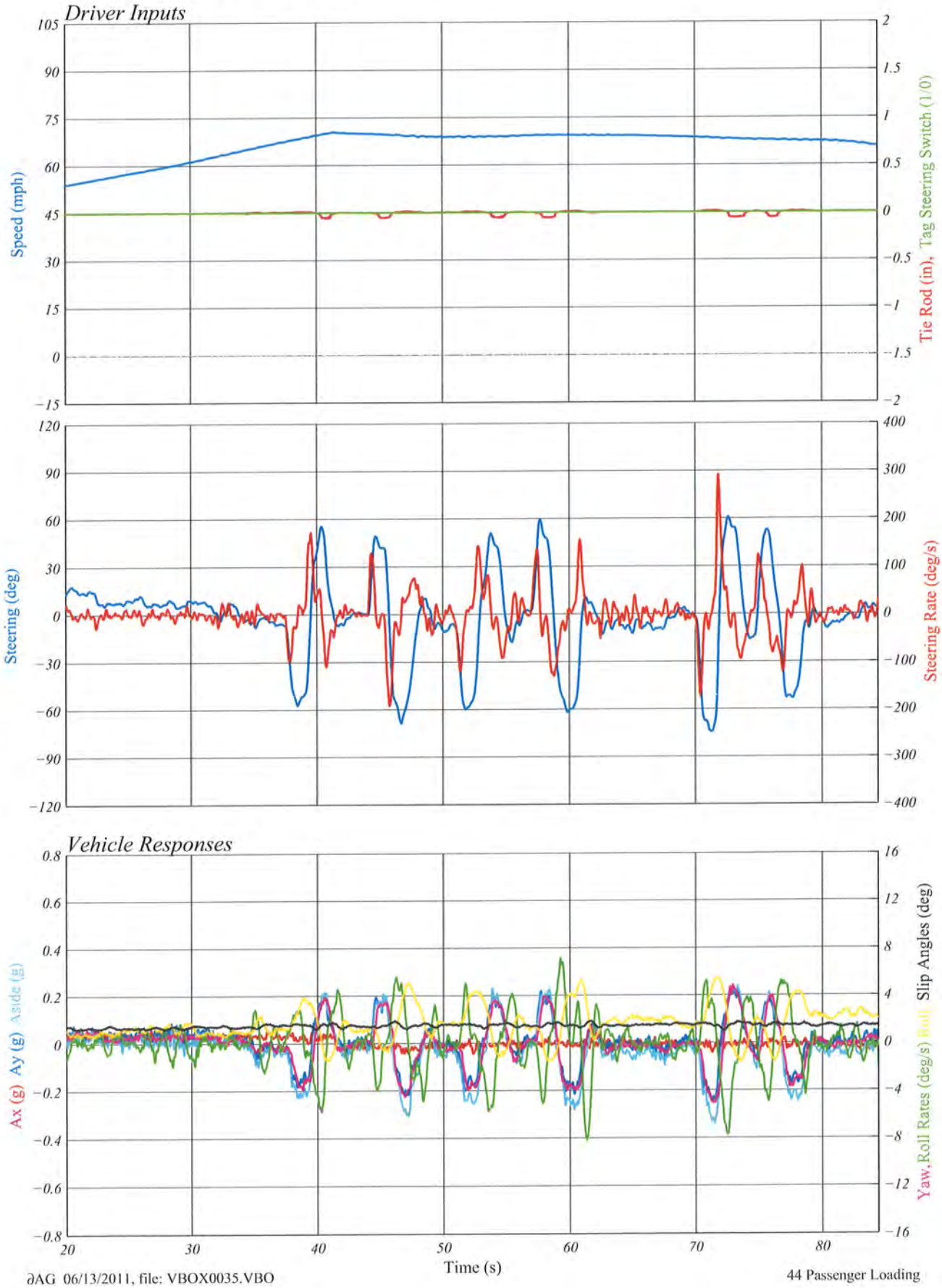
∂AG 06/13/2011, file: VBOX0034.VBO

44 Passenger Loading

Test: 34

1995 MCI 102DL3

Open Loop Lane Change, Locked



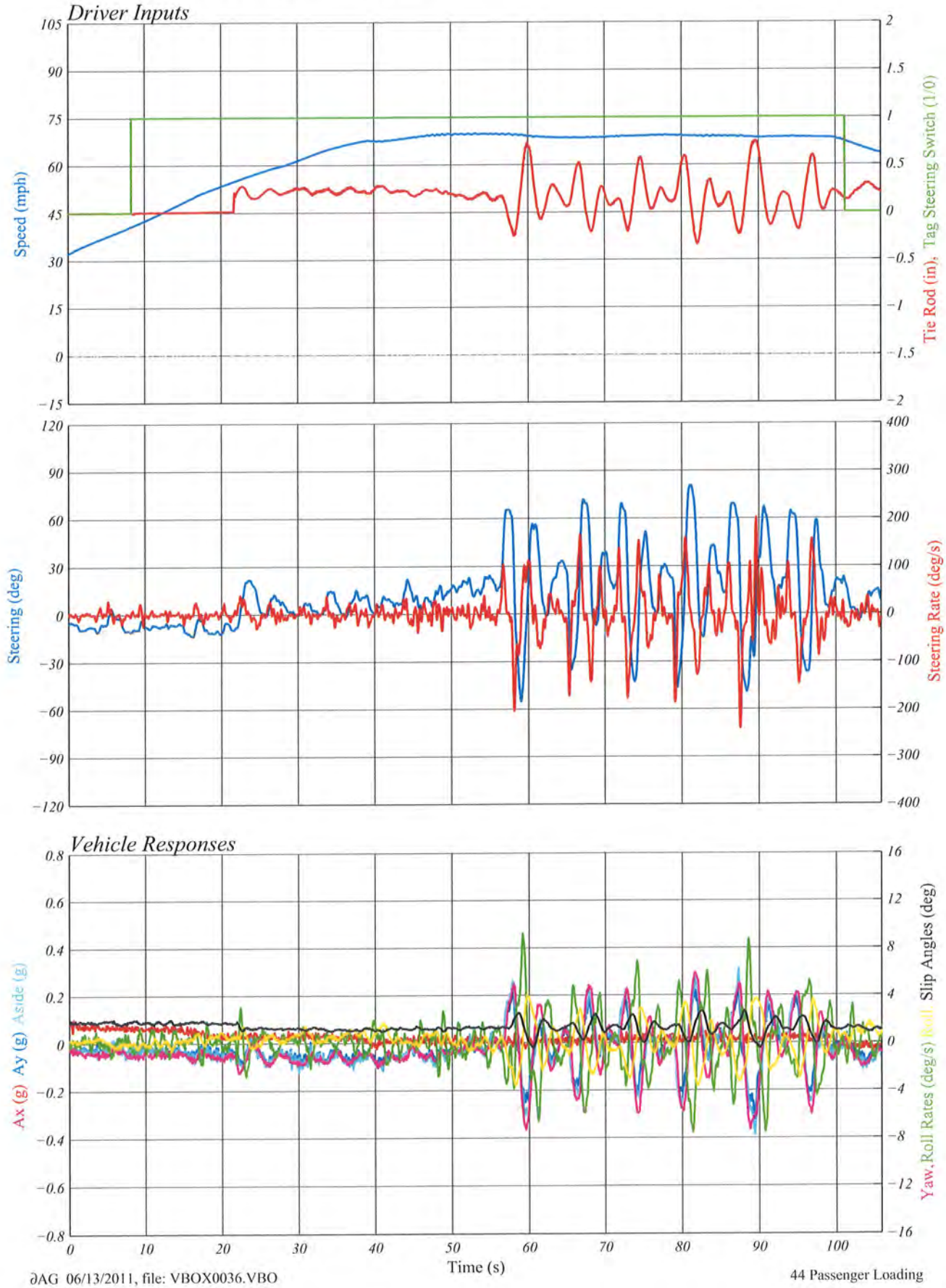
∂AG 06/13/2011, file: VBOX0035.VBO

44 Passenger Loading

Test: 35

1995 MCI 102DL3

Open Loop Lane Change, Unlocked



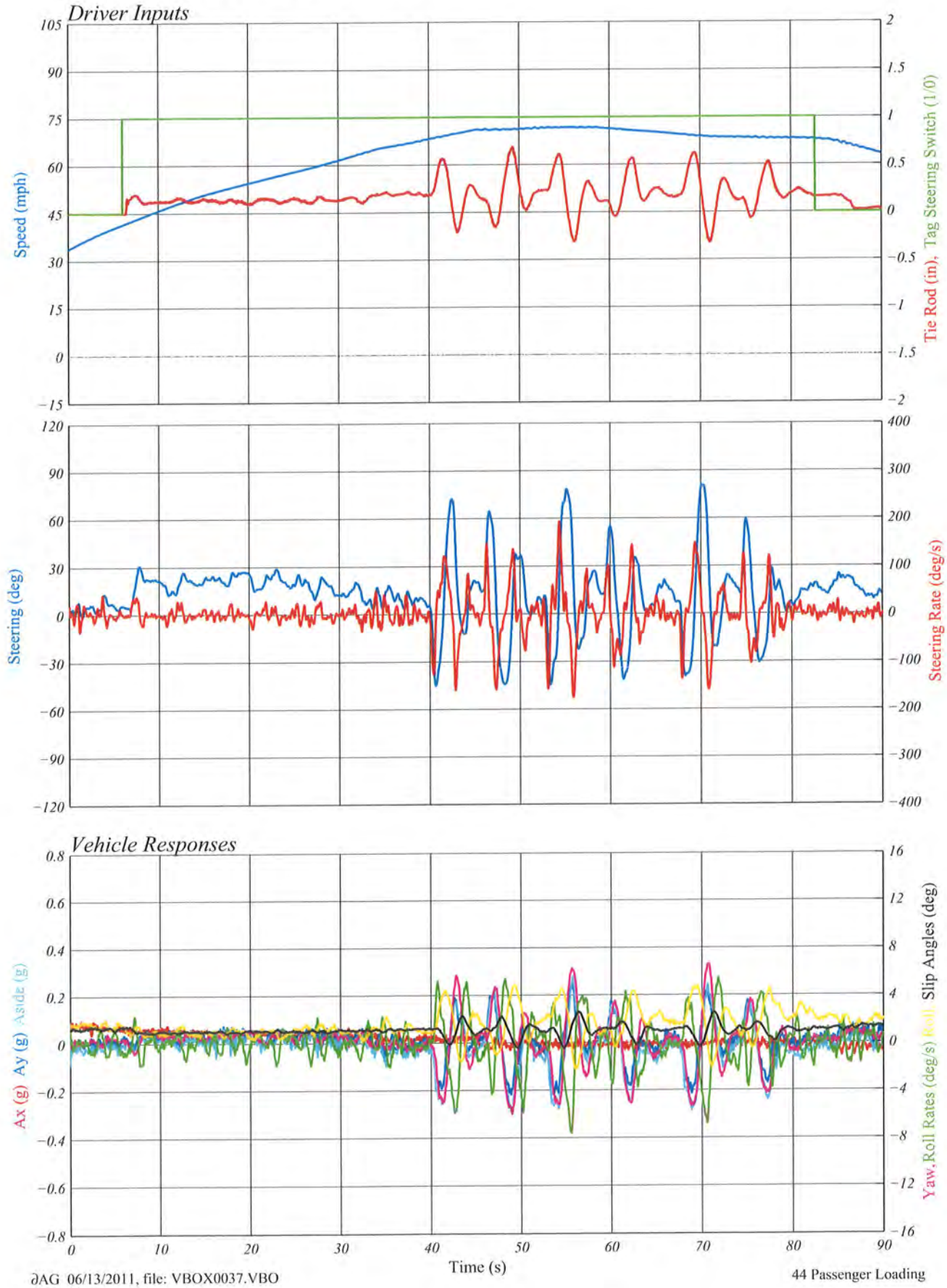
∂AG 06/13/2011, file: VBOX0036.VBO

44 Passenger Loading

Test: 36

1995 MCI 102DL3

Open Loop Lane Change, Unlocked

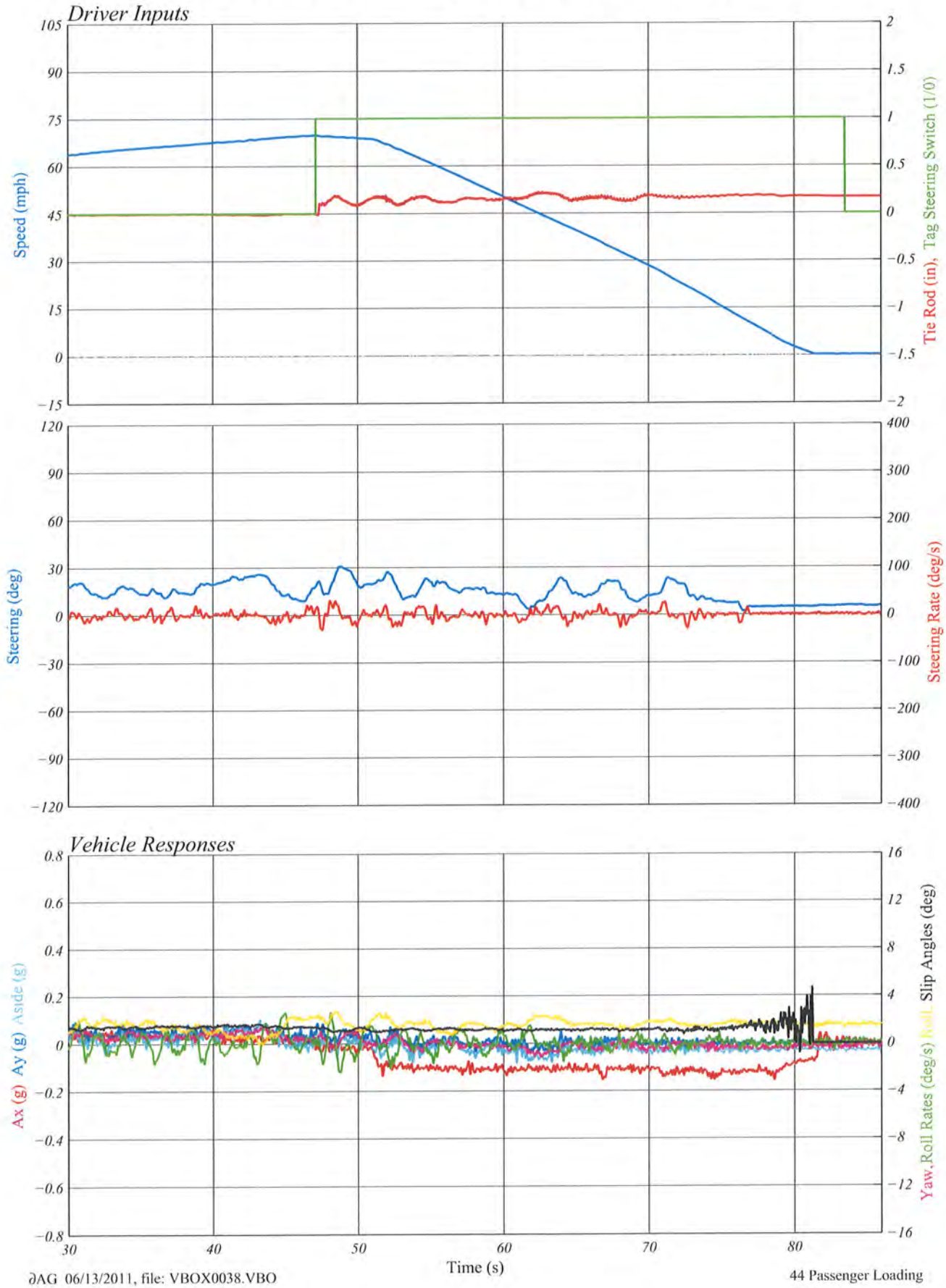


∂AG 06/13/2011, file: VBOX0037.VBO

44 Passenger Loading

Test: 37 1995 MCI 102DL3

Dynamic Unlock in a Curve, Downhill to the Right with Braking

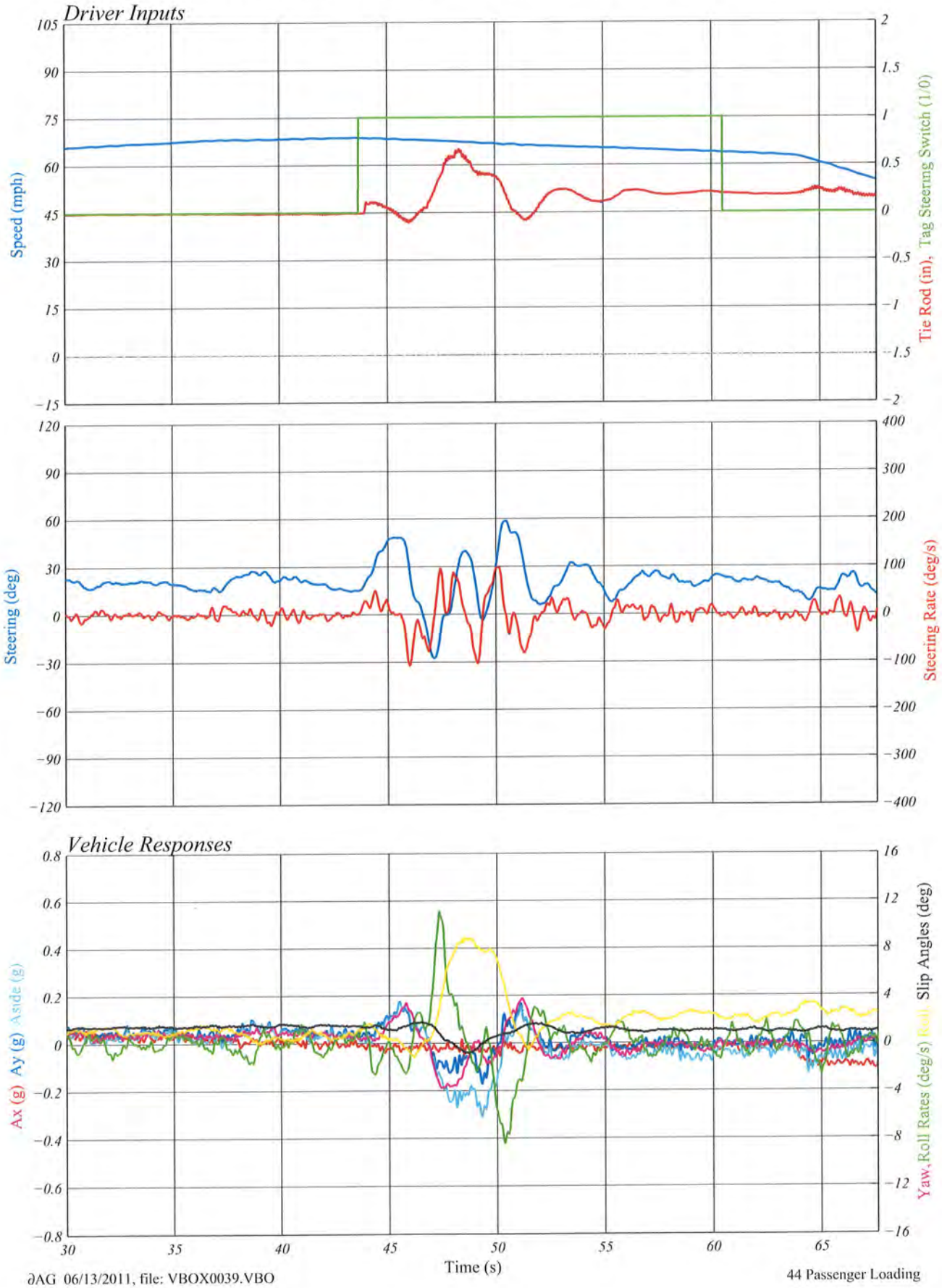


∂AG 06/13/2011, file: VBOX0038.VBO

44 Passenger Loading

Test: 38 1995 MCI 102DL3

Dynamic Unlock, Downhill to Right, Intentional Steer Toward Shoulder

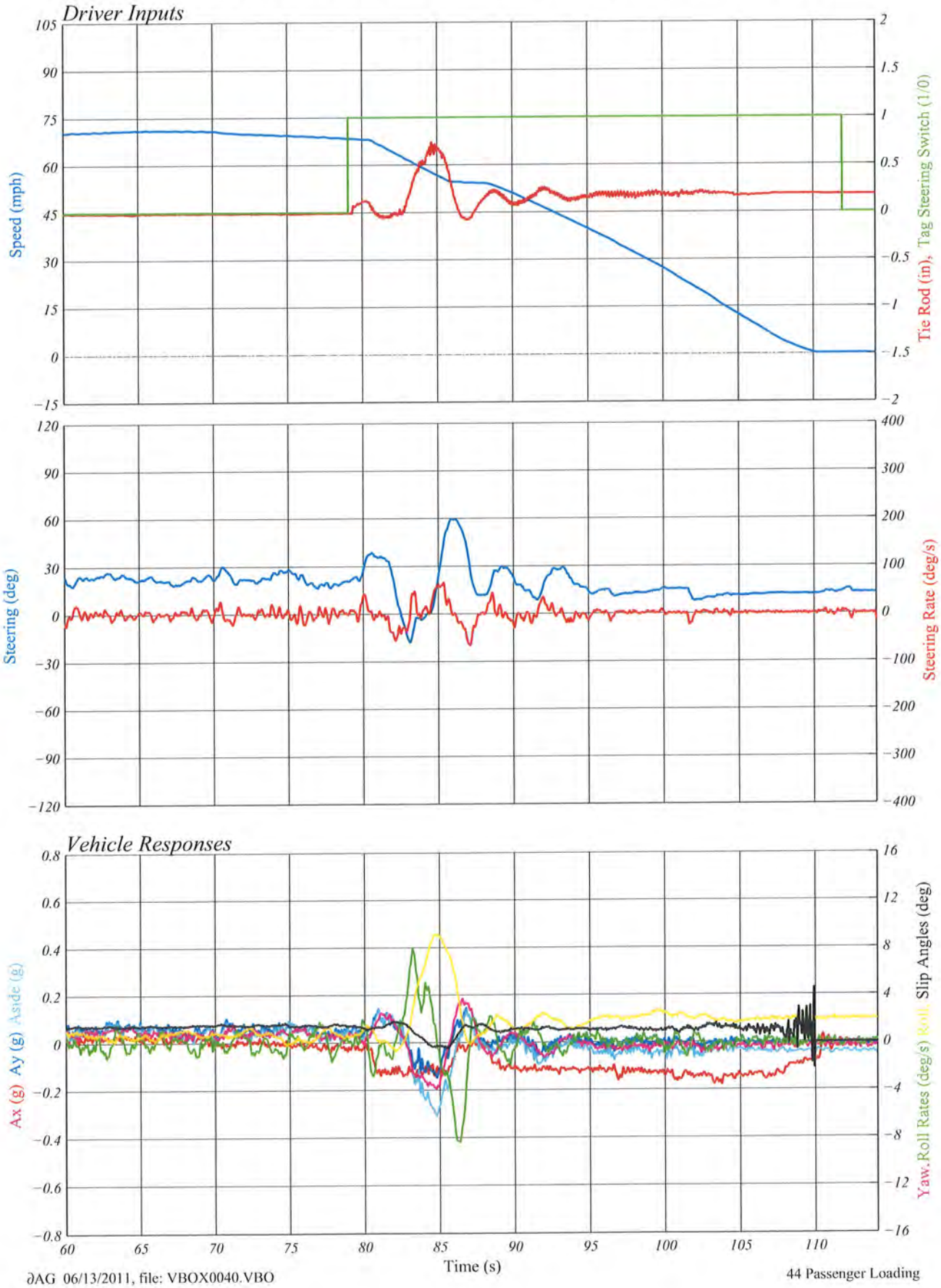


∂AG 06/13/2011, file: VBOX0039.VBO

44 Passenger Loading

Test: 39 1995 MCI 102DL3

Dynamic Unlock, Downhill to Right, Intentional Steer to Shoulder, Braking

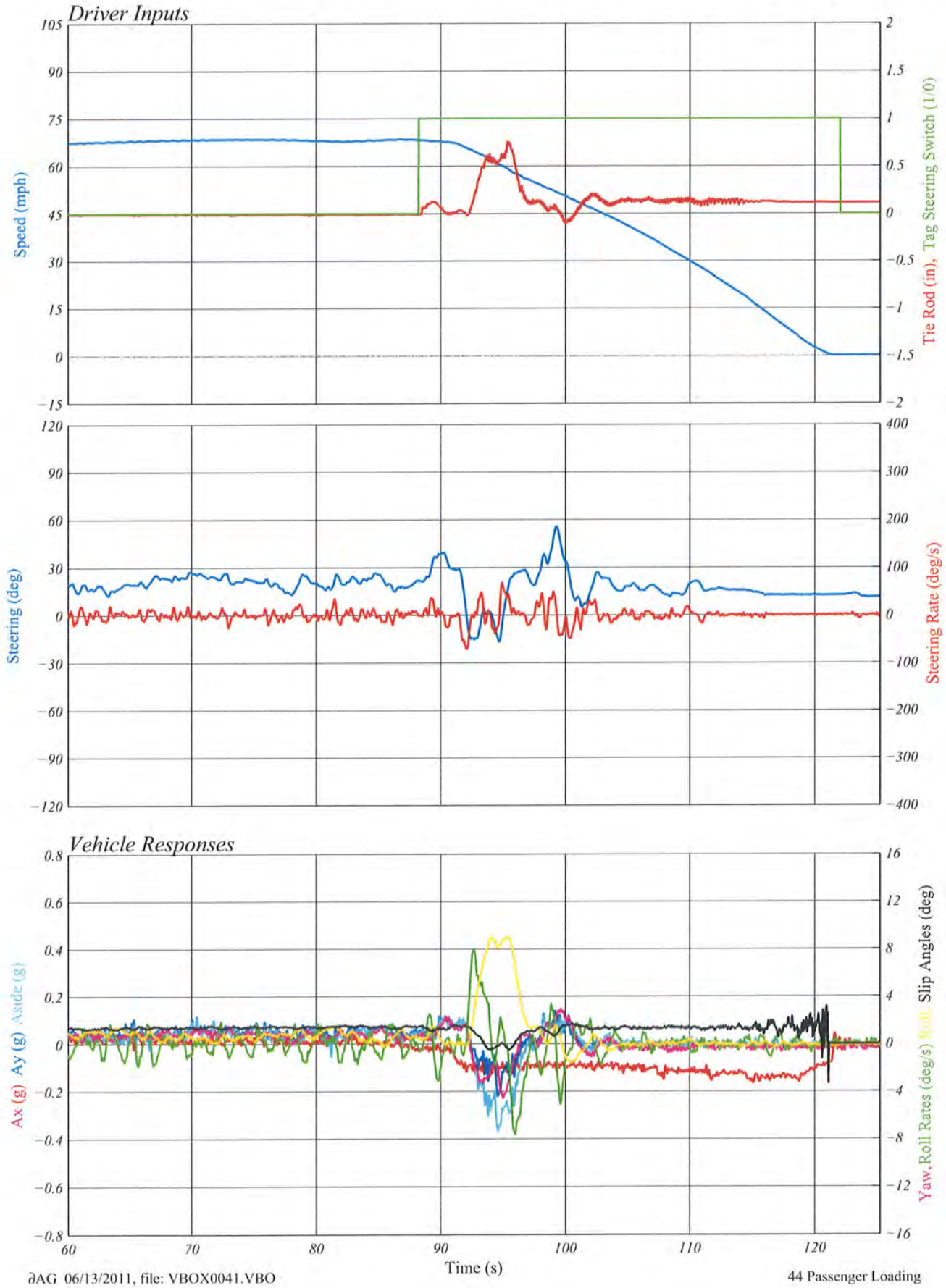


∂AG 06/13/2011, file: VBOX0040.VBO

44 Passenger Loading

Test: 40 1995 MCI 102DL3

Dynamic Unlock, Downhill to Right, Intentional Steer to Shoulder & Left, Braking



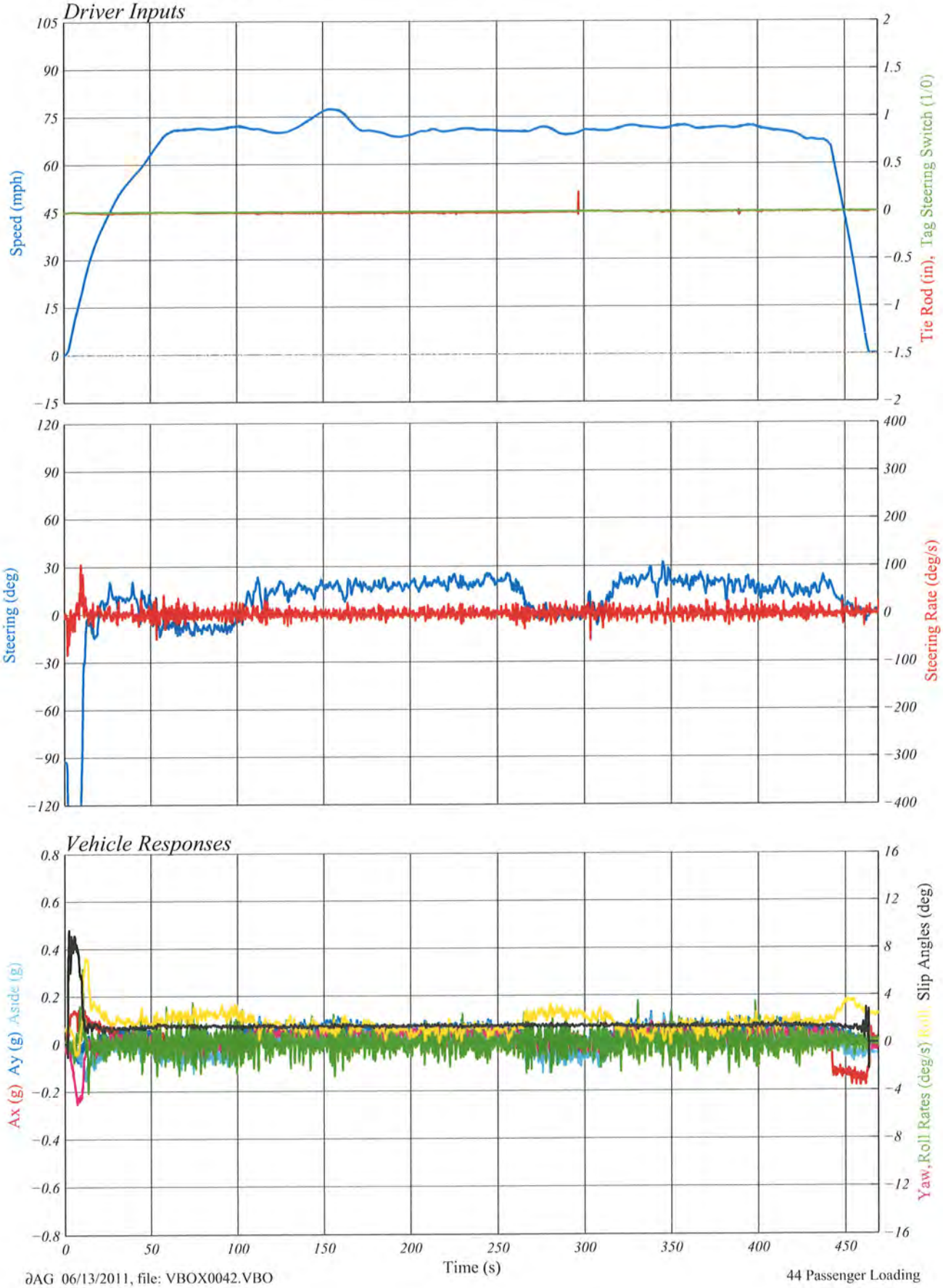
∂AG 06/13/2011, file: VBOX0041.VBO

44 Passenger Loading

Test: 41

1995 MCI 102DL3

Extended Driving, Locked



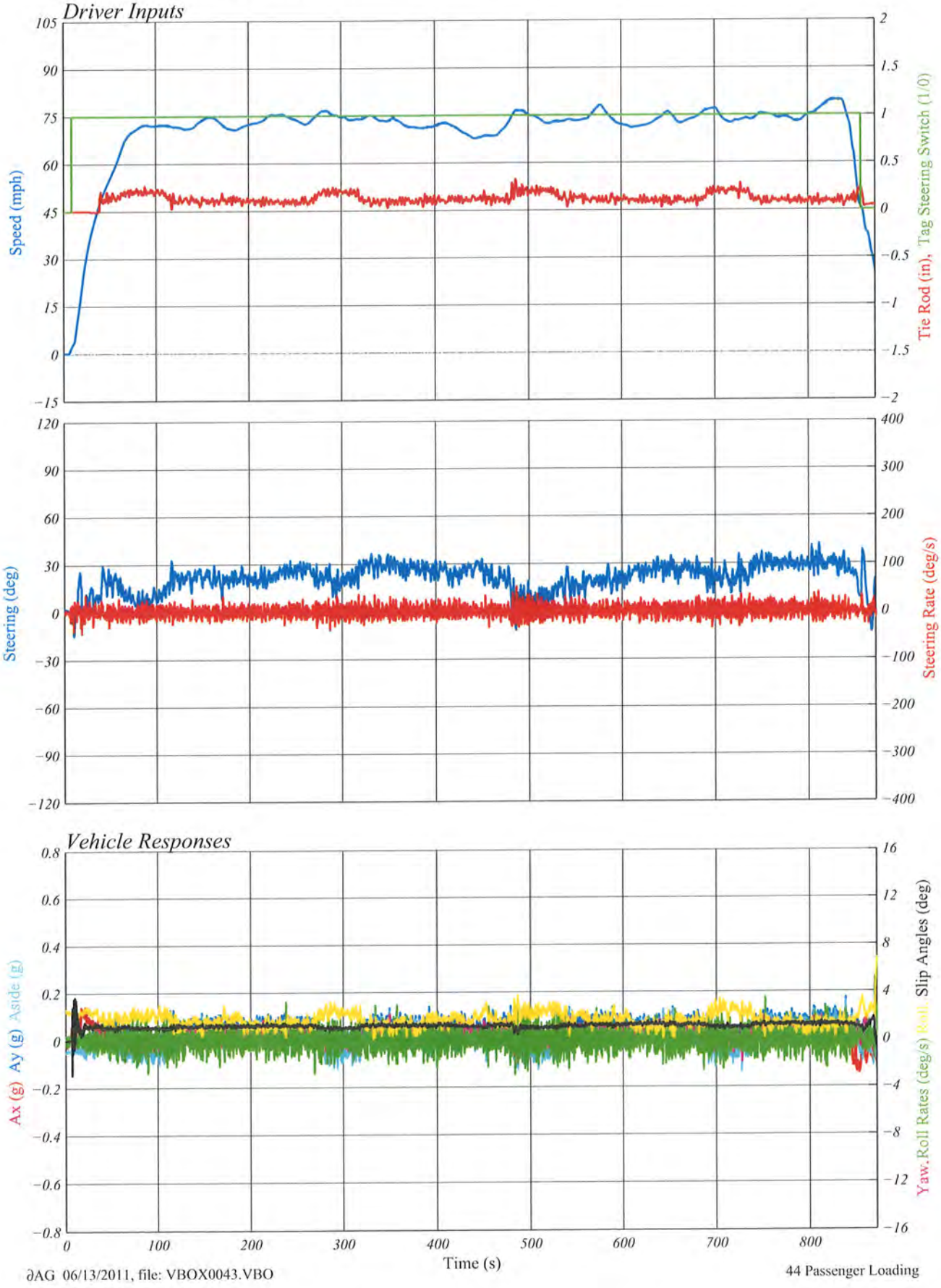
∂AG 06/13/2011, file: VBOX0042.VBO

44 Passenger Loading

Test: 42

1995 MCI 102DL3

Extended Driving, Unlocked



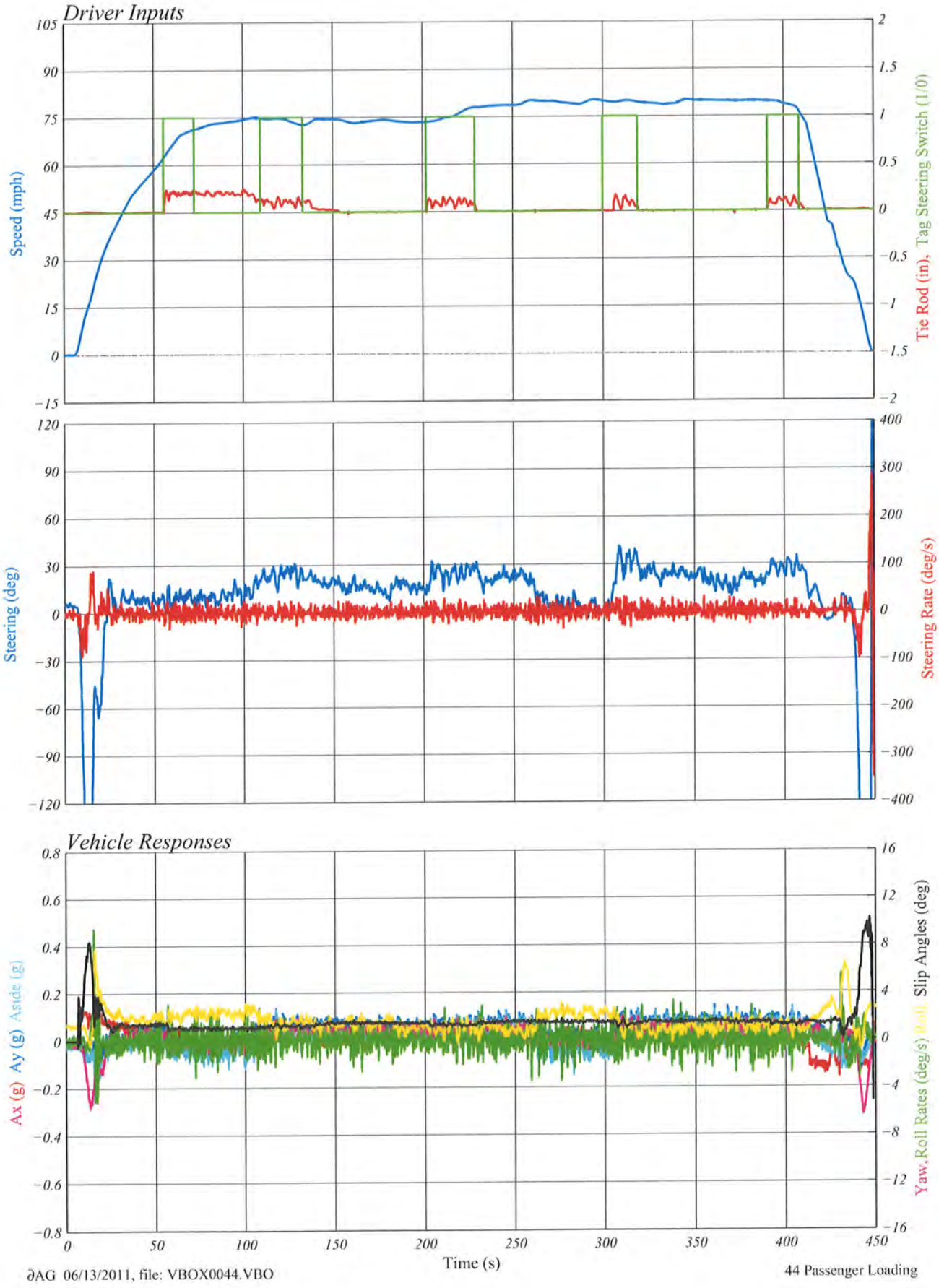
∂AG 06/13/2011, file: VBOX0043.VBO

44 Passenger Loading

Test: 43

1995 MCI 102DL3

Surprise Unlock

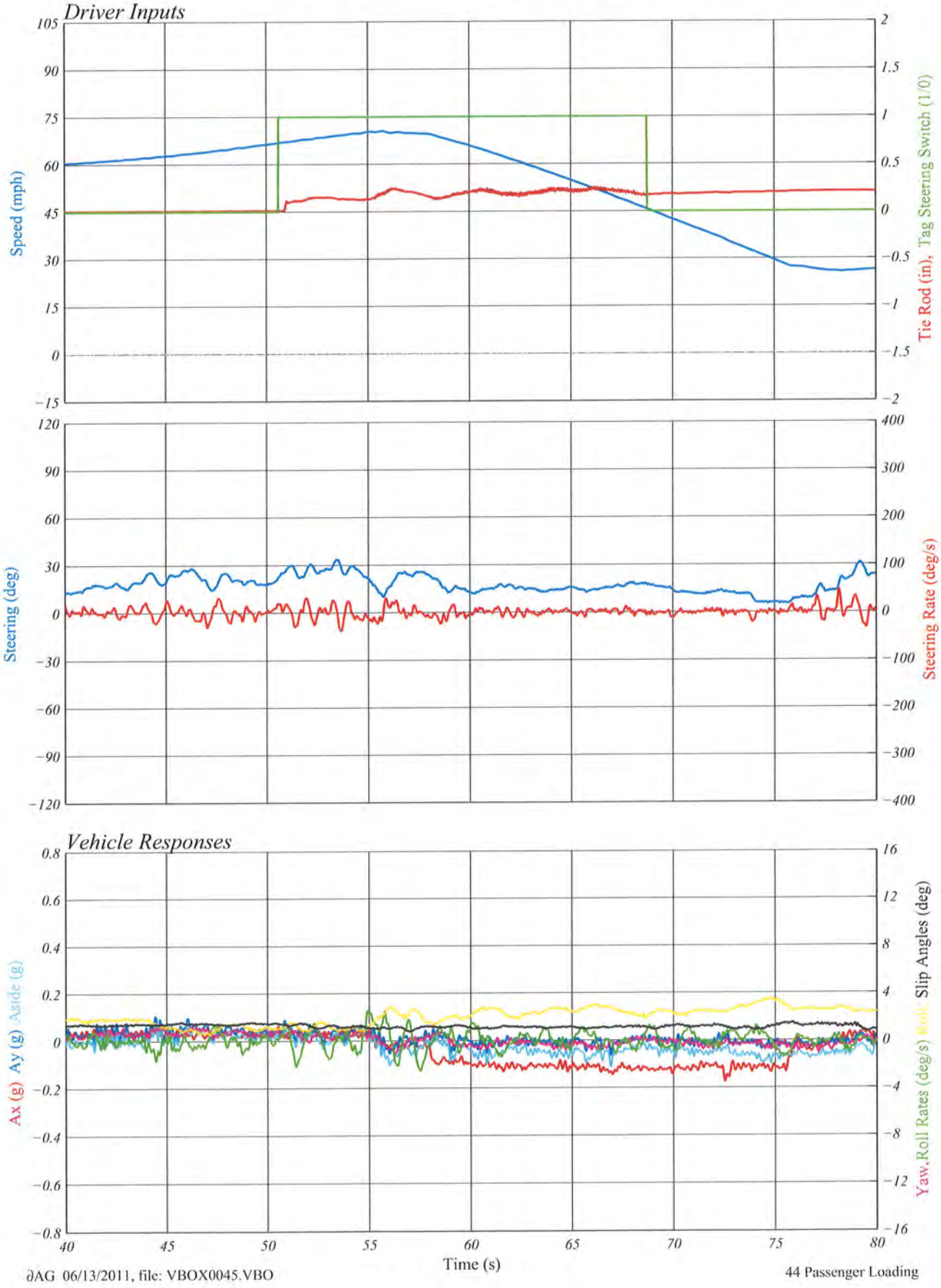


∂AG 06/13/2011, file: VBOX0044.VBO

44 Passenger Loading

Test: 44 1995 MCI 102DL3

Dynamic Unlock in a Curve, Downhill to the Right with Braking, Wet Surface

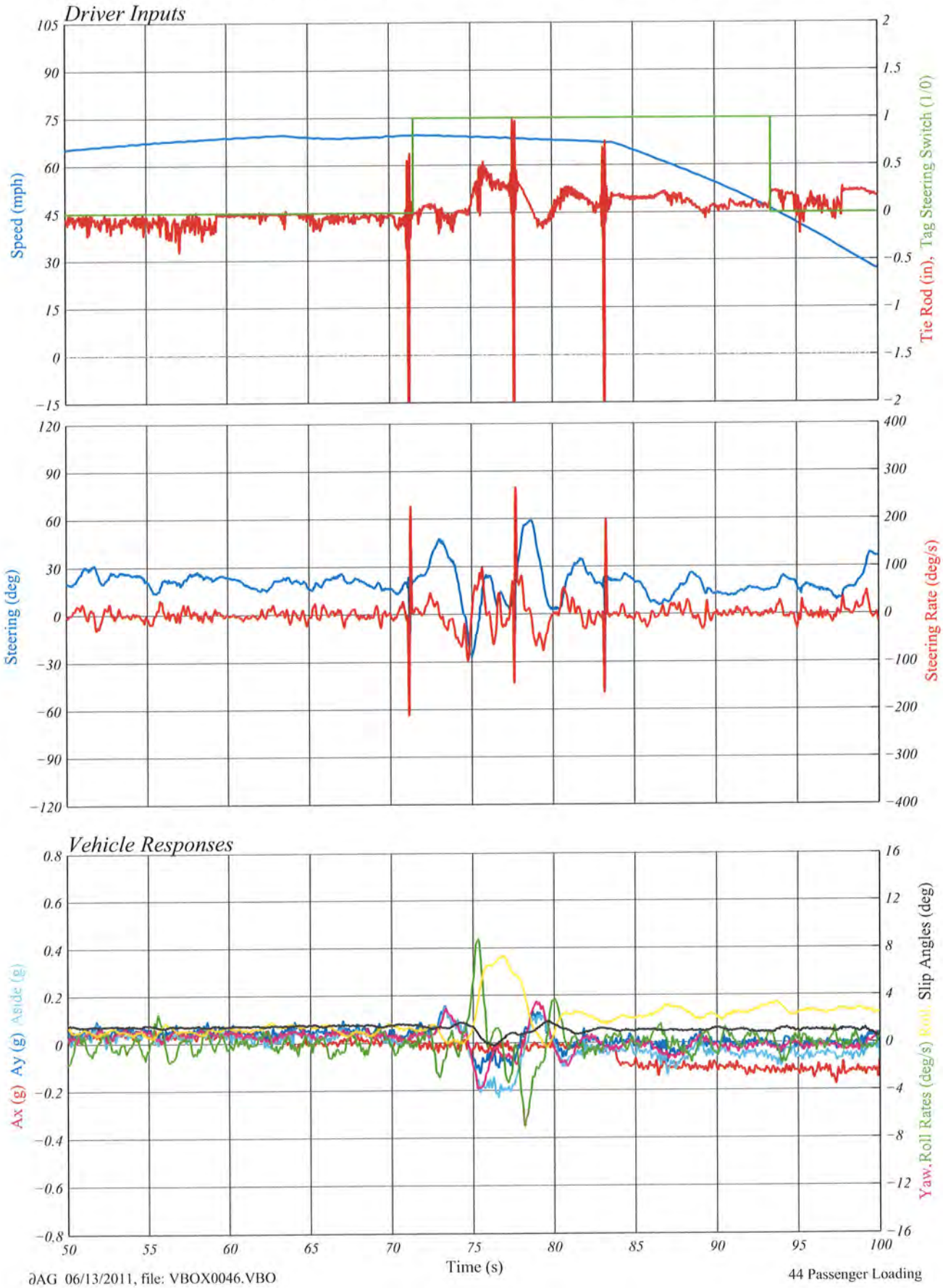


∂AG 06/13/2011, file: VBOX0045.VBO

44 Passenger Loading

Test: 45 1995 MCI 102DL3

Dynamic Unlock, Downhill to Right, Intentional Steer to Shoulder, Wet Surface

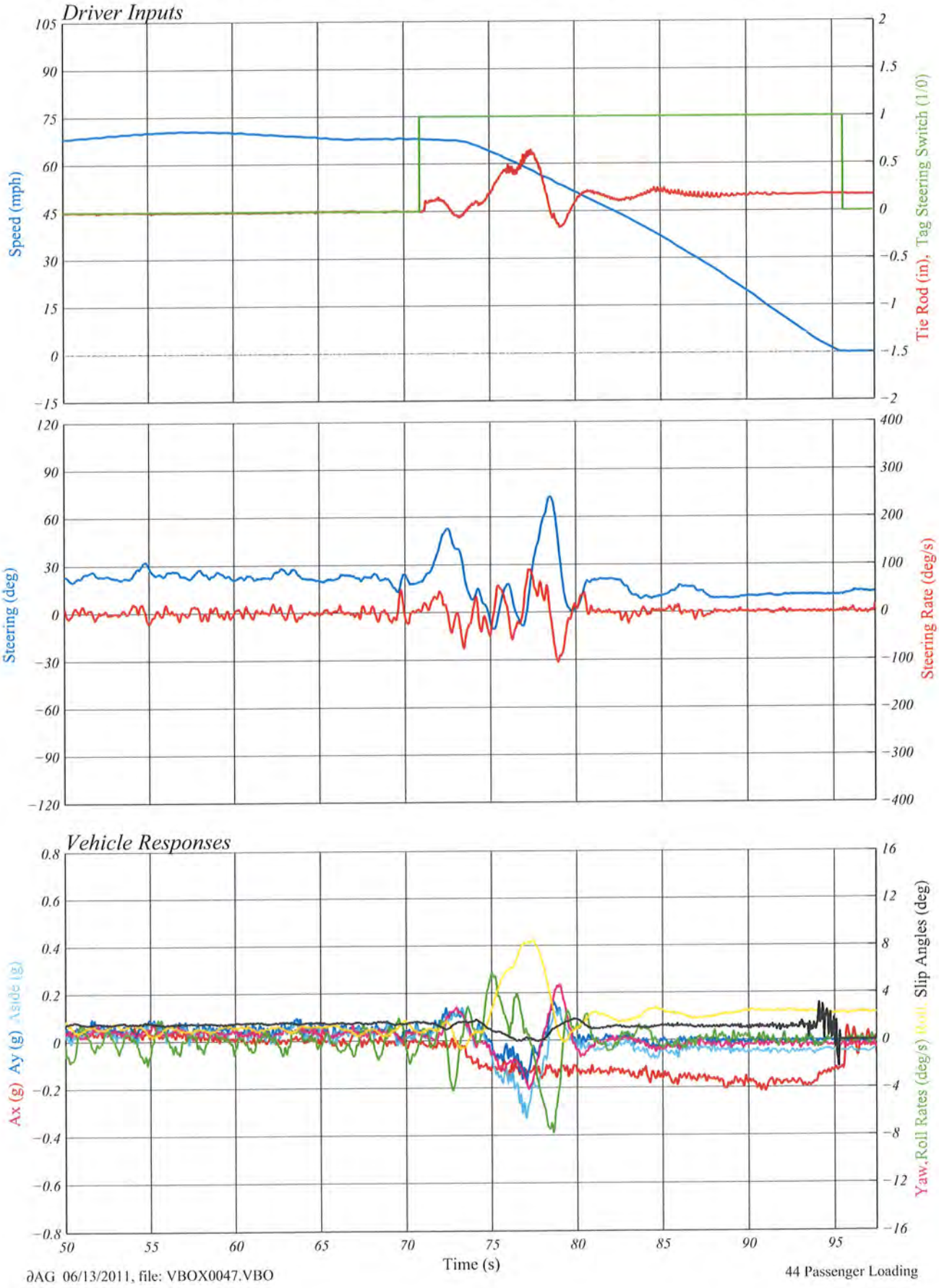


∂AG 06/13/2011, file: VBOX0046.VBO

44 Passenger Loading

Test: 46 1995 MCI 102DL3

Dynamic Unlock, Downhill to Right, Intentional Steer to Shoulder, Braking, Wet

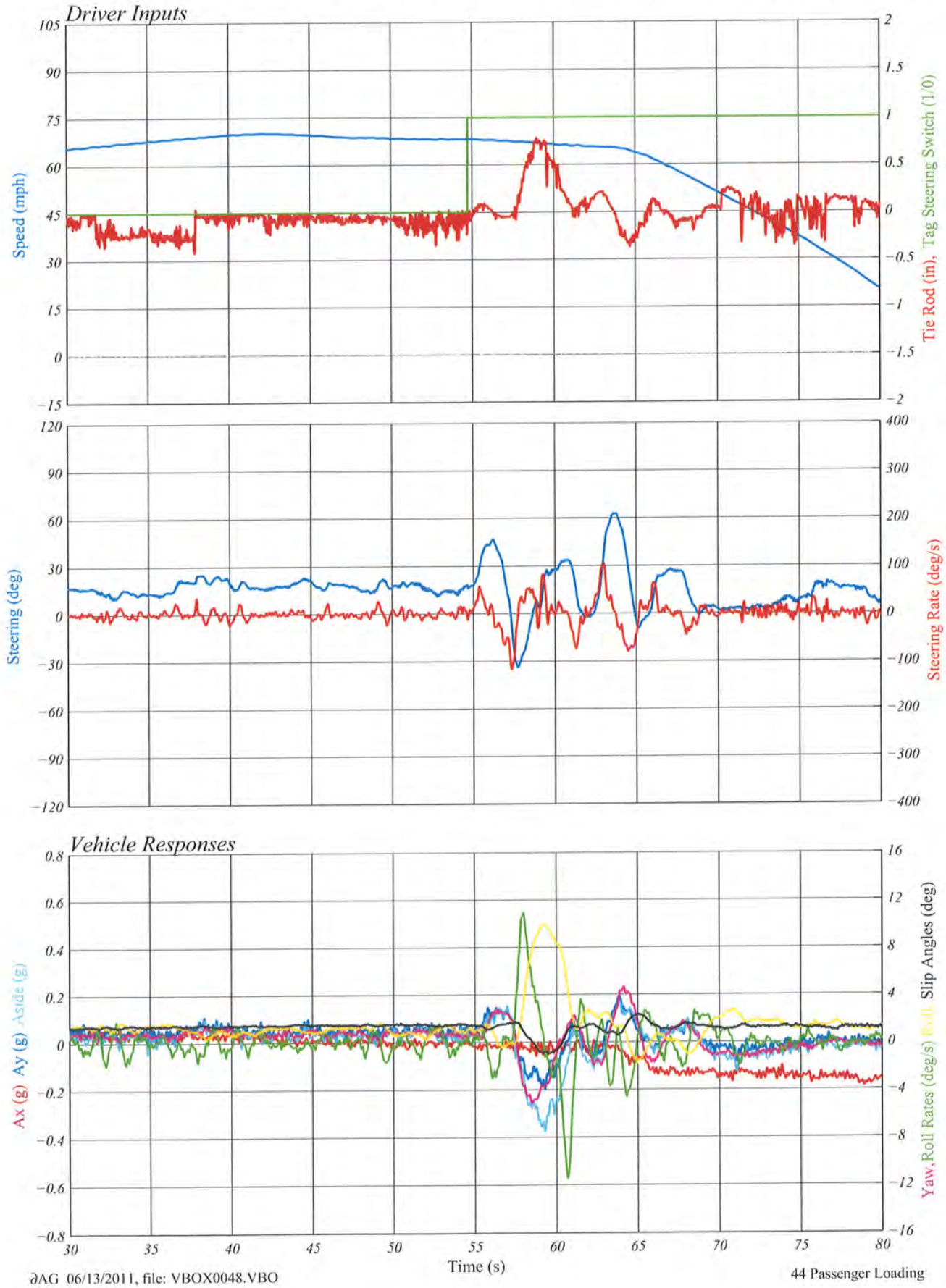


∂AG 06/13/2011, file: VBOX0047.VBO

44 Passenger Loading

Test: 47 1995 MCI 102DL3

Dynamic Unlock, Downhill to Right, Intentional Steer to Shoulder & Left, Braking, Wet



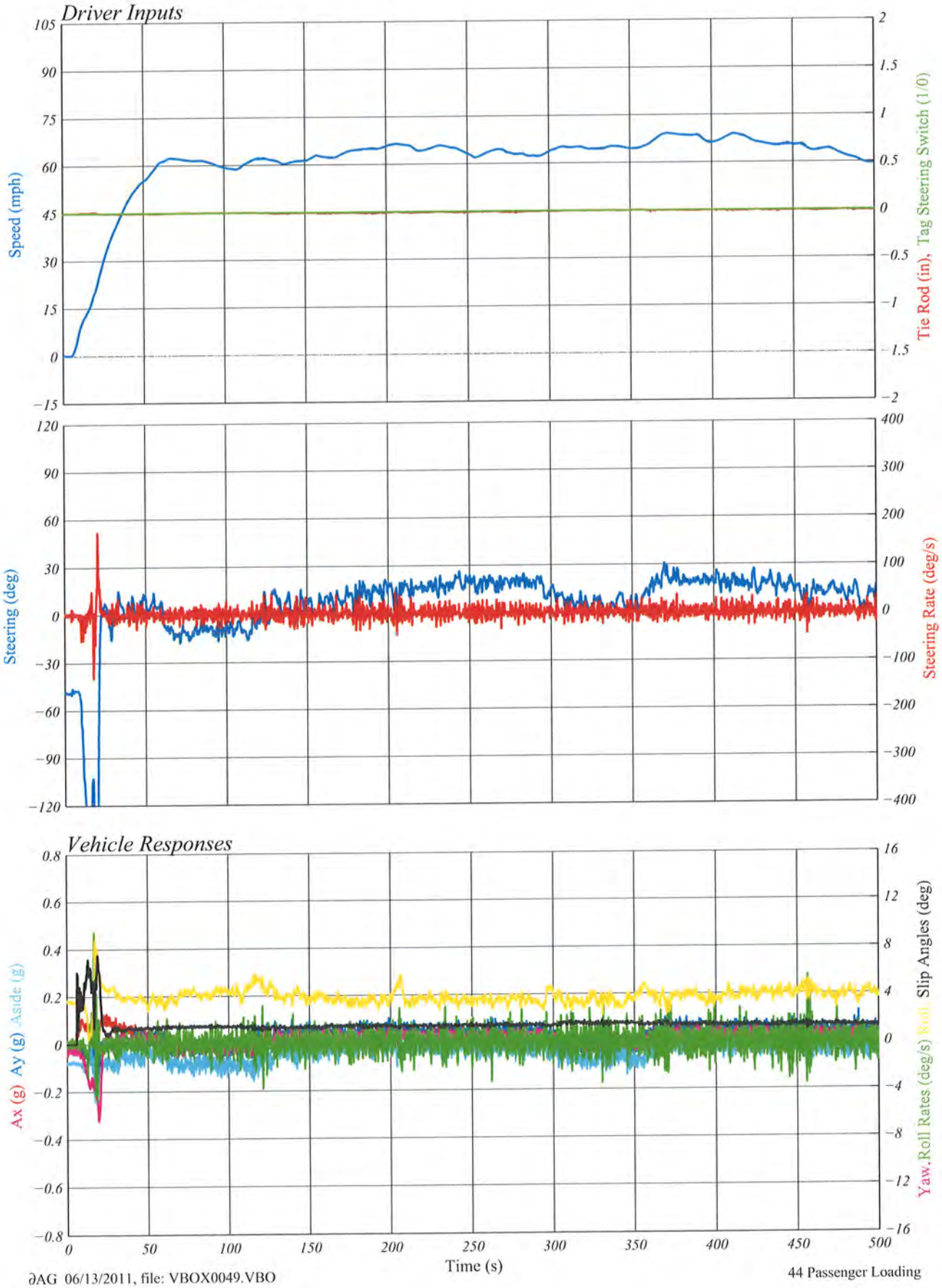
∂AG 06/13/2011, file: VBOX0048.VBO

44 Passenger Loading

Test: 48

1995 MCI 102DL3

Modified U–Joint Bearing – Lap 1



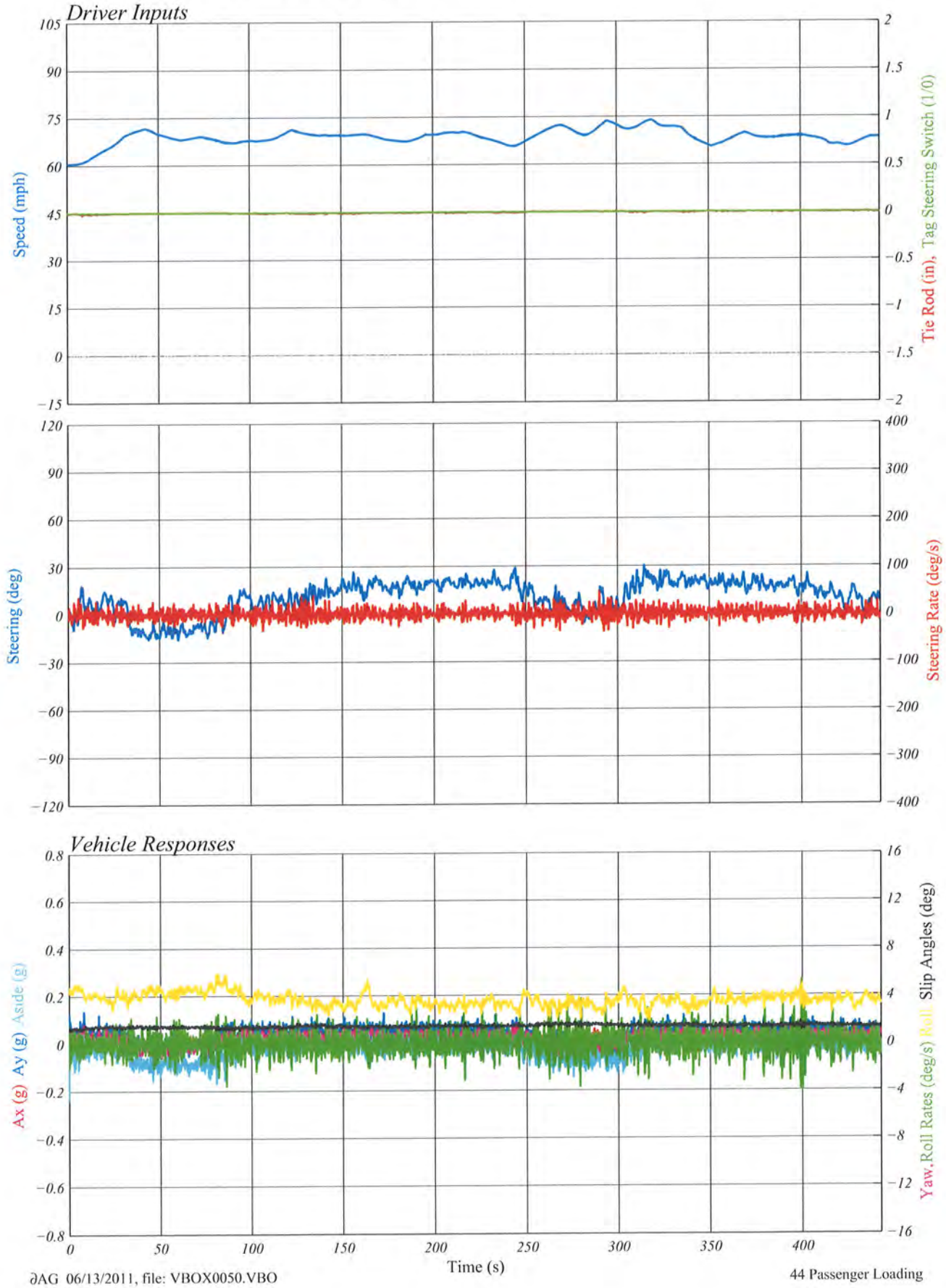
∂AG 06/13/2011, file: VBOX0049.VBO

44 Passenger Loading

Test: 49

1995 MCI 102DL3

Modified U–Joint Bearing – Lap 2



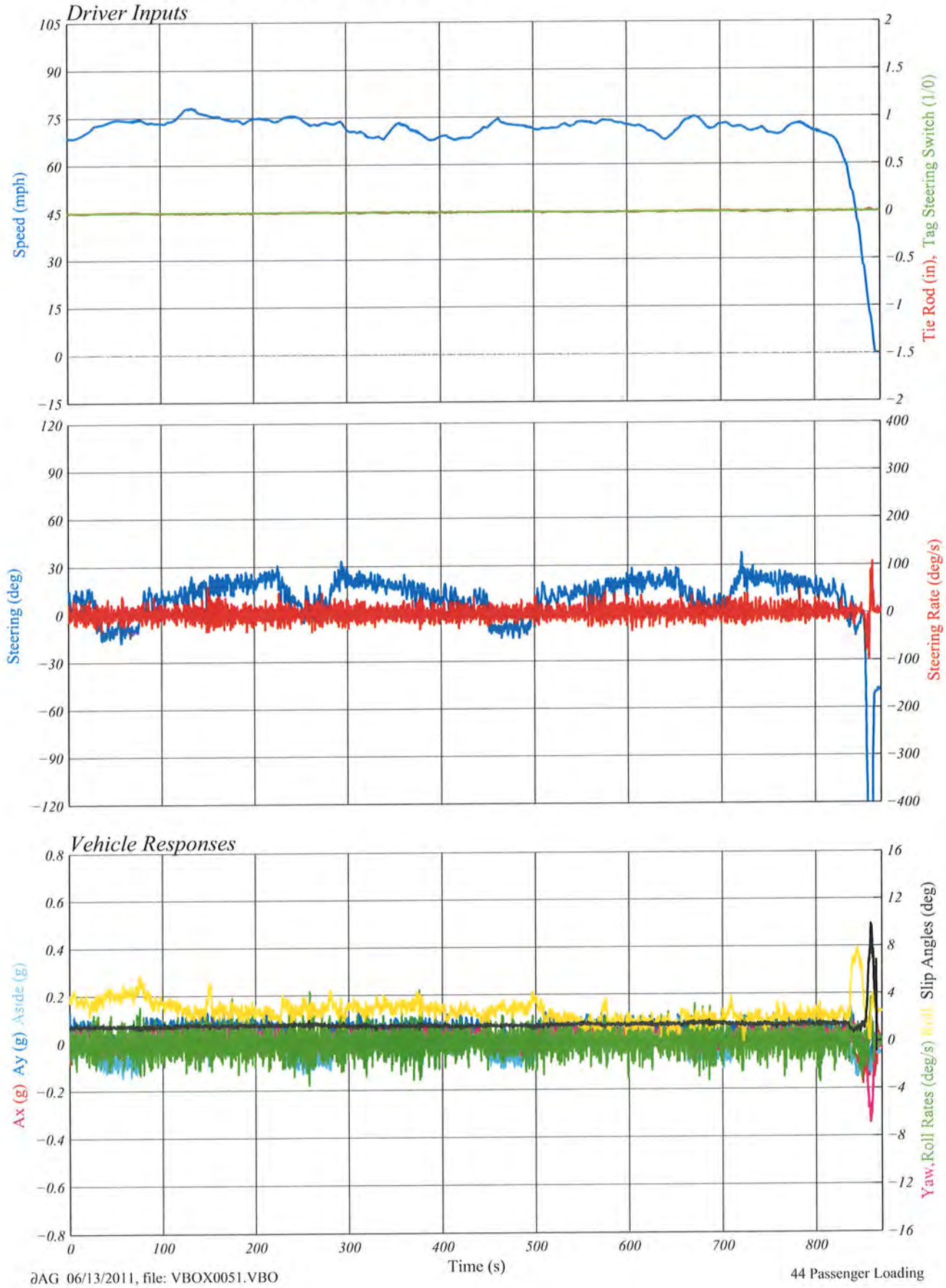
∂AG 06/13/2011, file: VBOX0050.VBO

44 Passenger Loading

Test: 50

1995 MCI 102DL3

Modified U−Joint Bearing − Laps 3 and 4

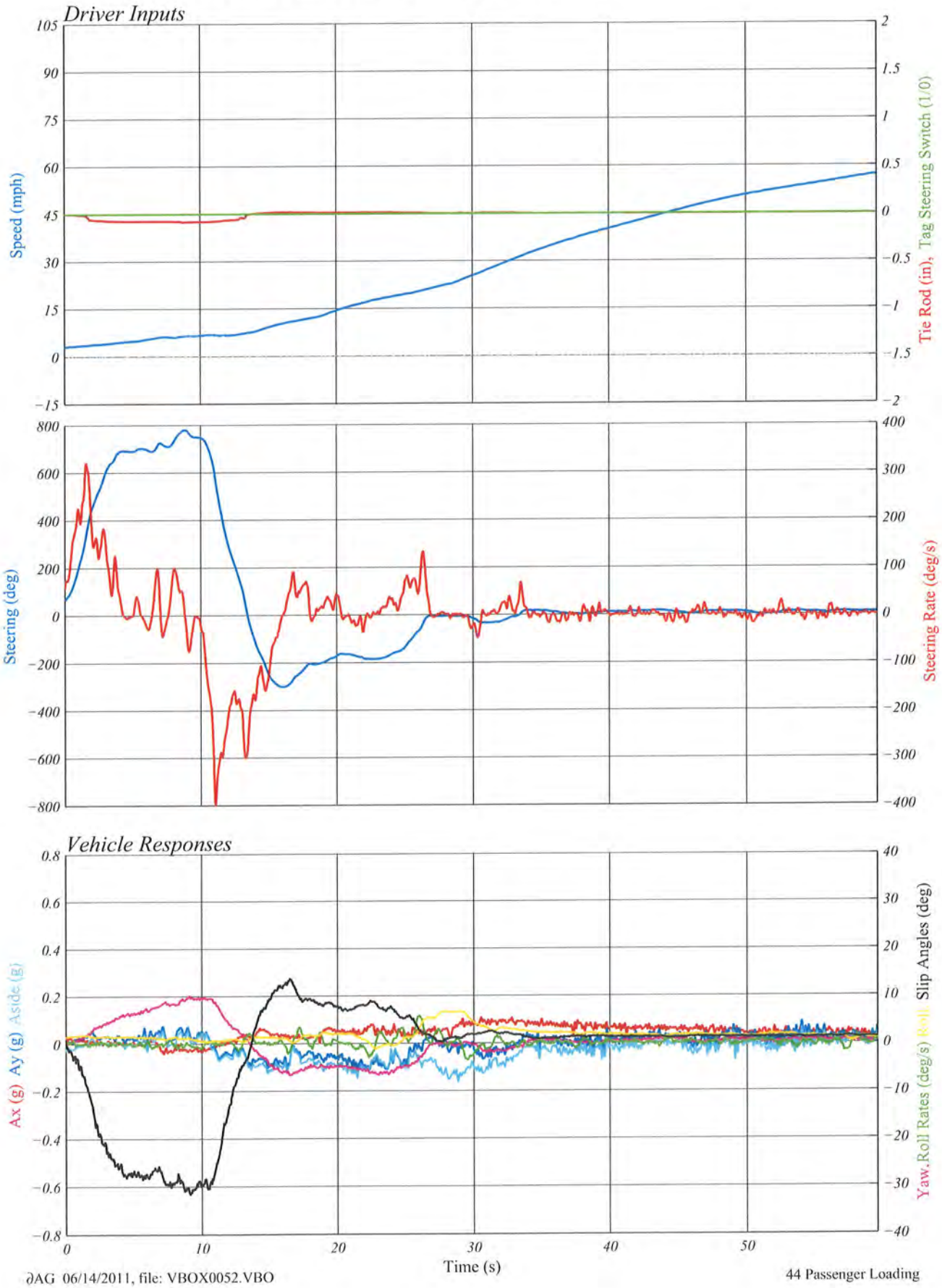


∂AG 06/13/2011, file: VBOX0051.VBO

44 Passenger Loading

Test: 51 1995 MCI 102DL3

Modified U−joint Bearing − Lap 5, Incomplete Data



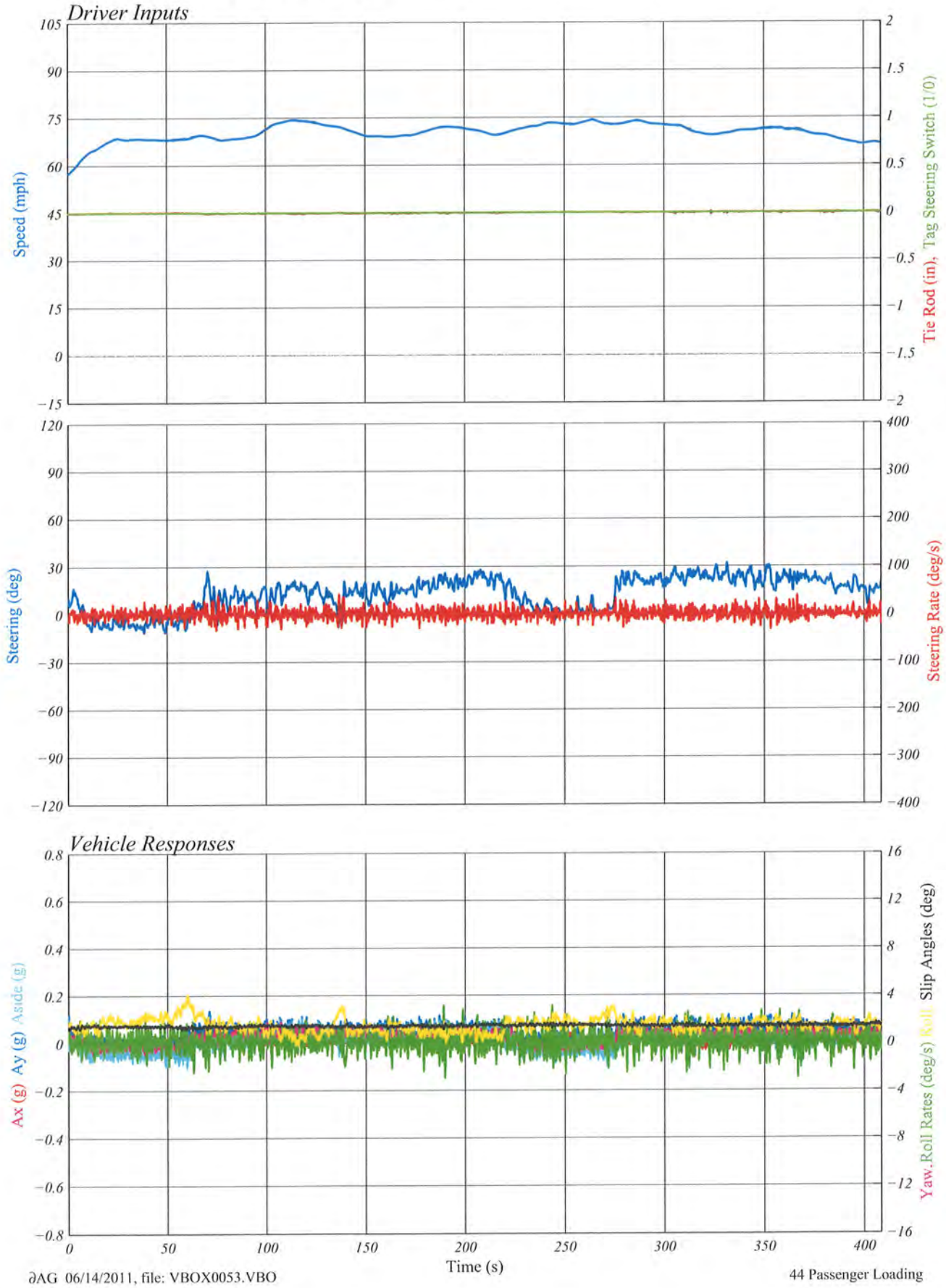
∂AG 06/14/2011, file: VBOX0052.VBO

44 Passenger Loading

Test: 52

1995 MCI 102DL3

Modified U−joint Bearing − Lap 6



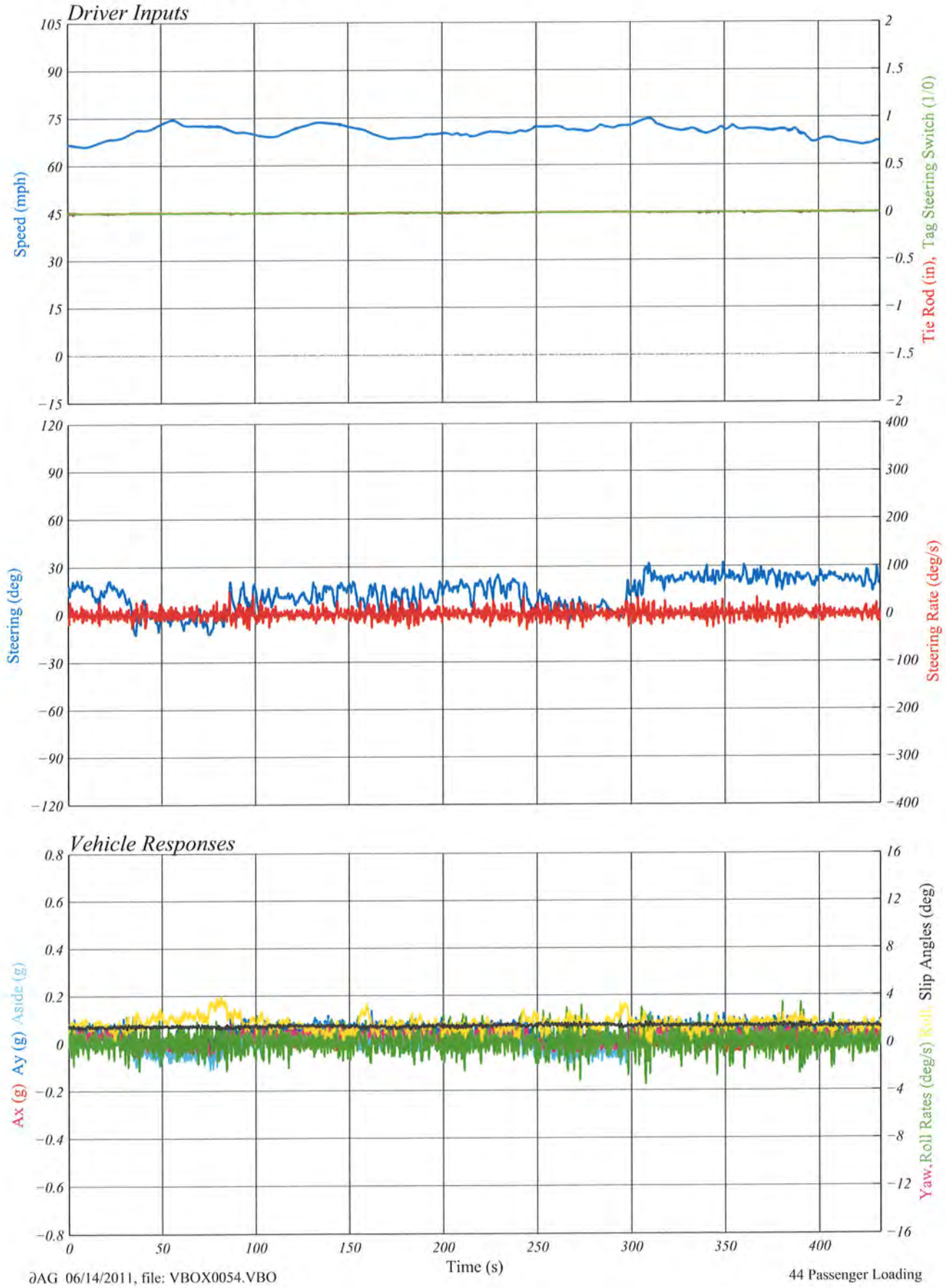
∂AG 06/14/2011, file: VBOX0053.VBO

44 Passenger Loading

Test: 53

1995 MCI 102DL3

Modified U−joint Bearing − Lap 7



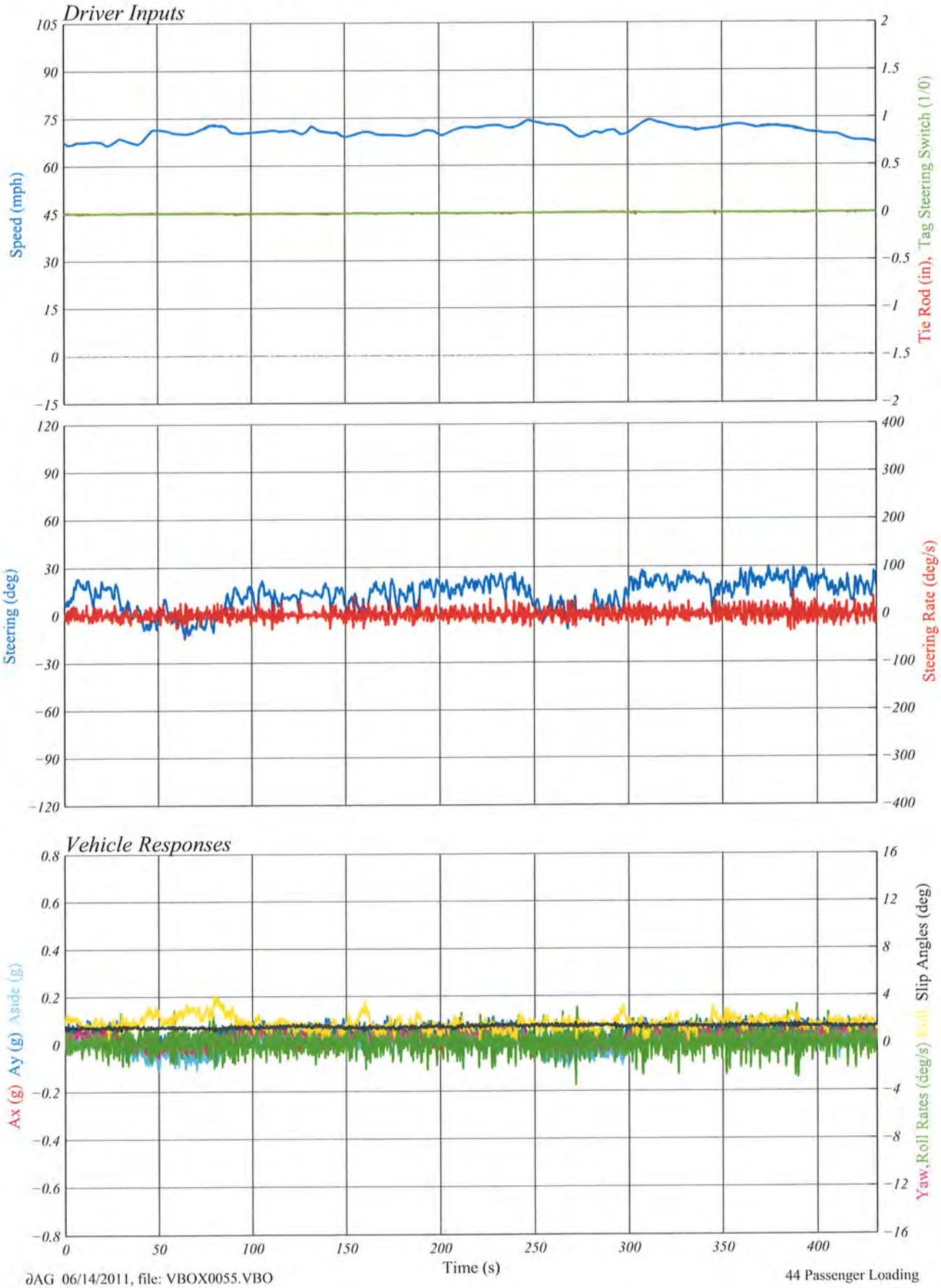
∂AG 06/14/2011, file: VBOX0054.VBO

44 Passenger Loading

Test: 54

1995 MCI 102DL3

Modified U−joint Bearing − Lap 8

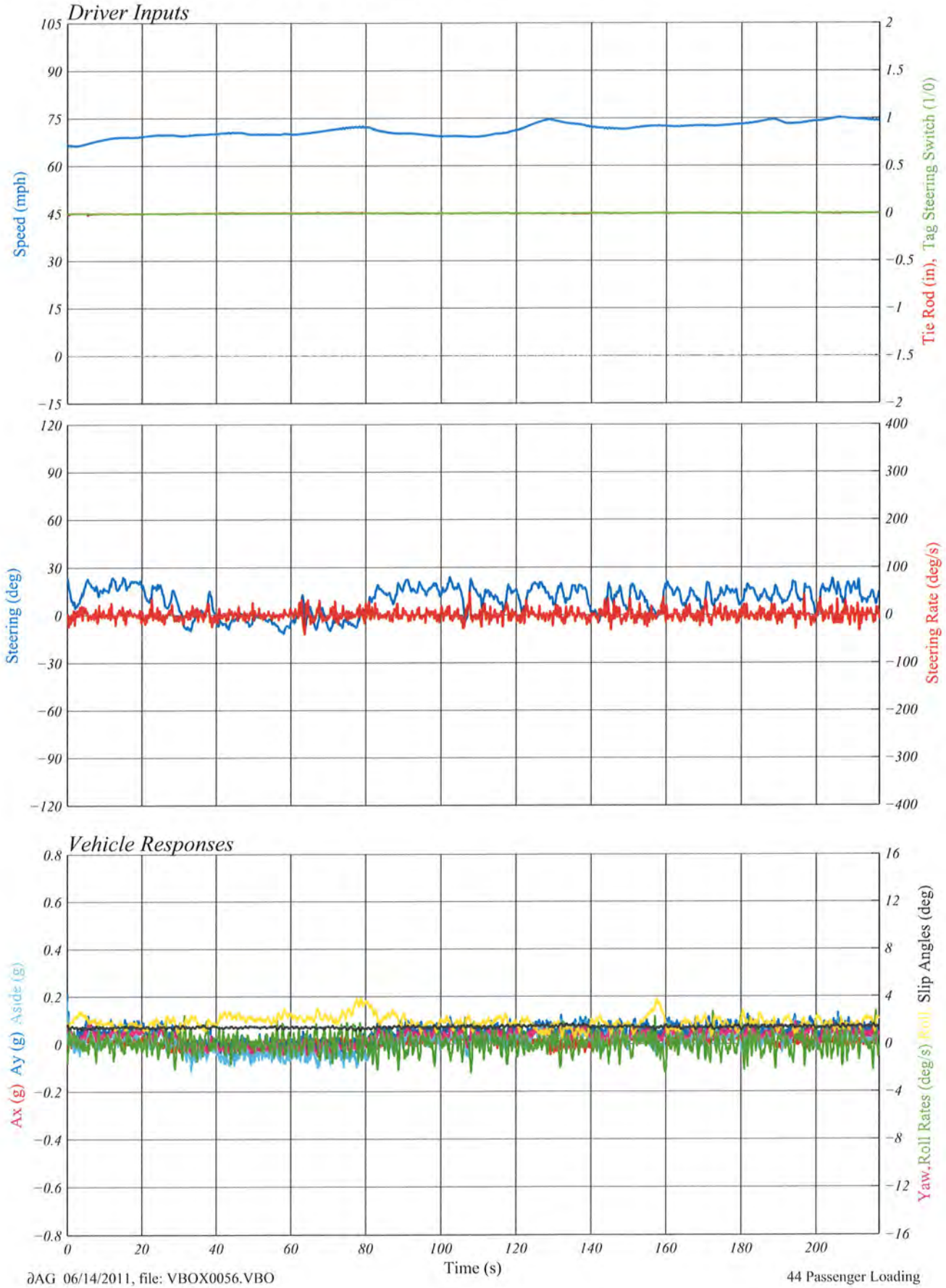


∂AG 06/14/2011, file: VBOX0055.VBO

44 Passenger Loading

Test: 55 1995 MCI 102DL3

Modified U−joint Bearing − Lap 9, first half

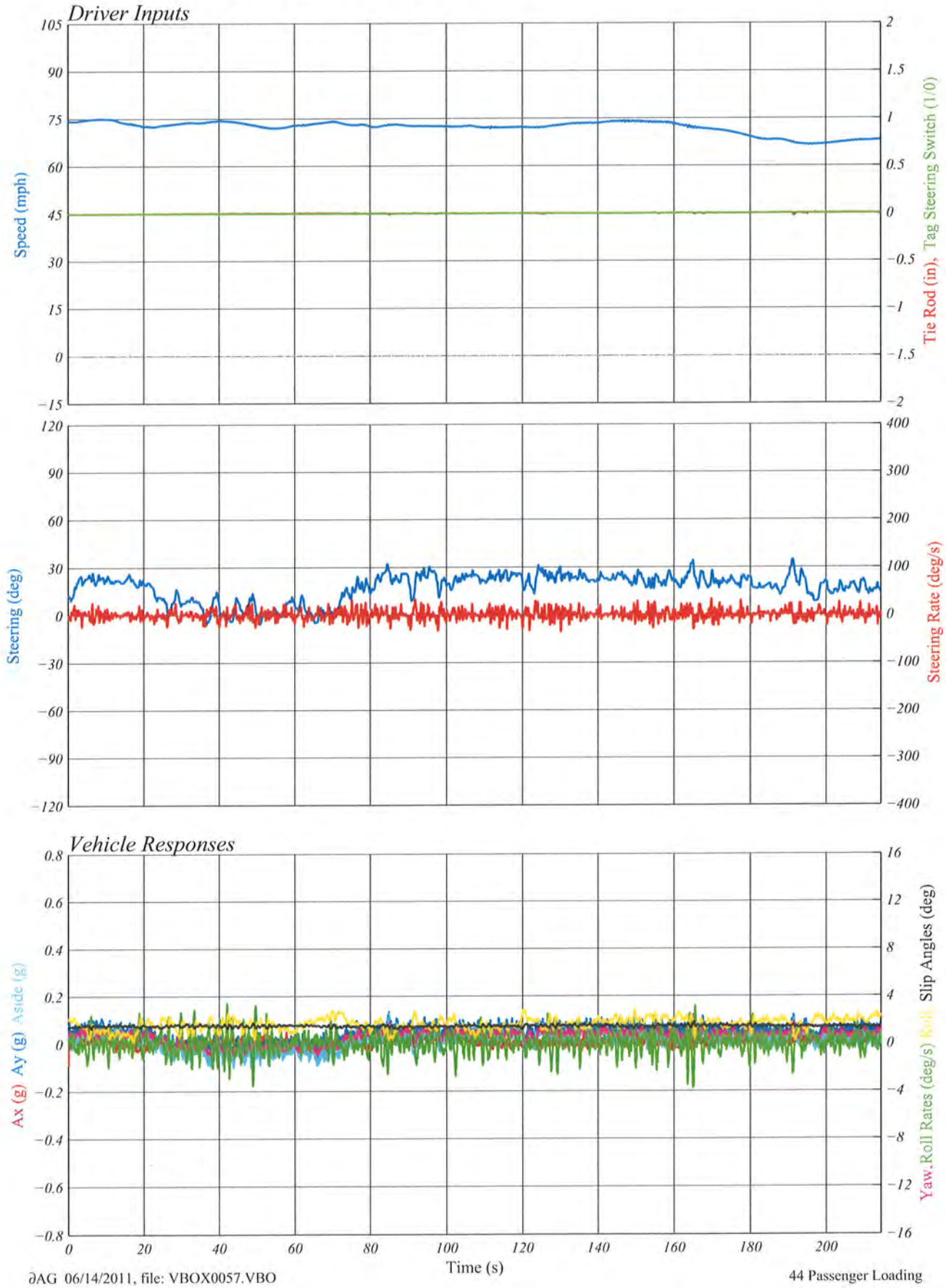


∂AG 06/14/2011, file: VBOX0056.VBO

44 Passenger Loading

Test: 56 1995 MCI 102DL3

Modified U−joint Bearing − Lap 9, second half



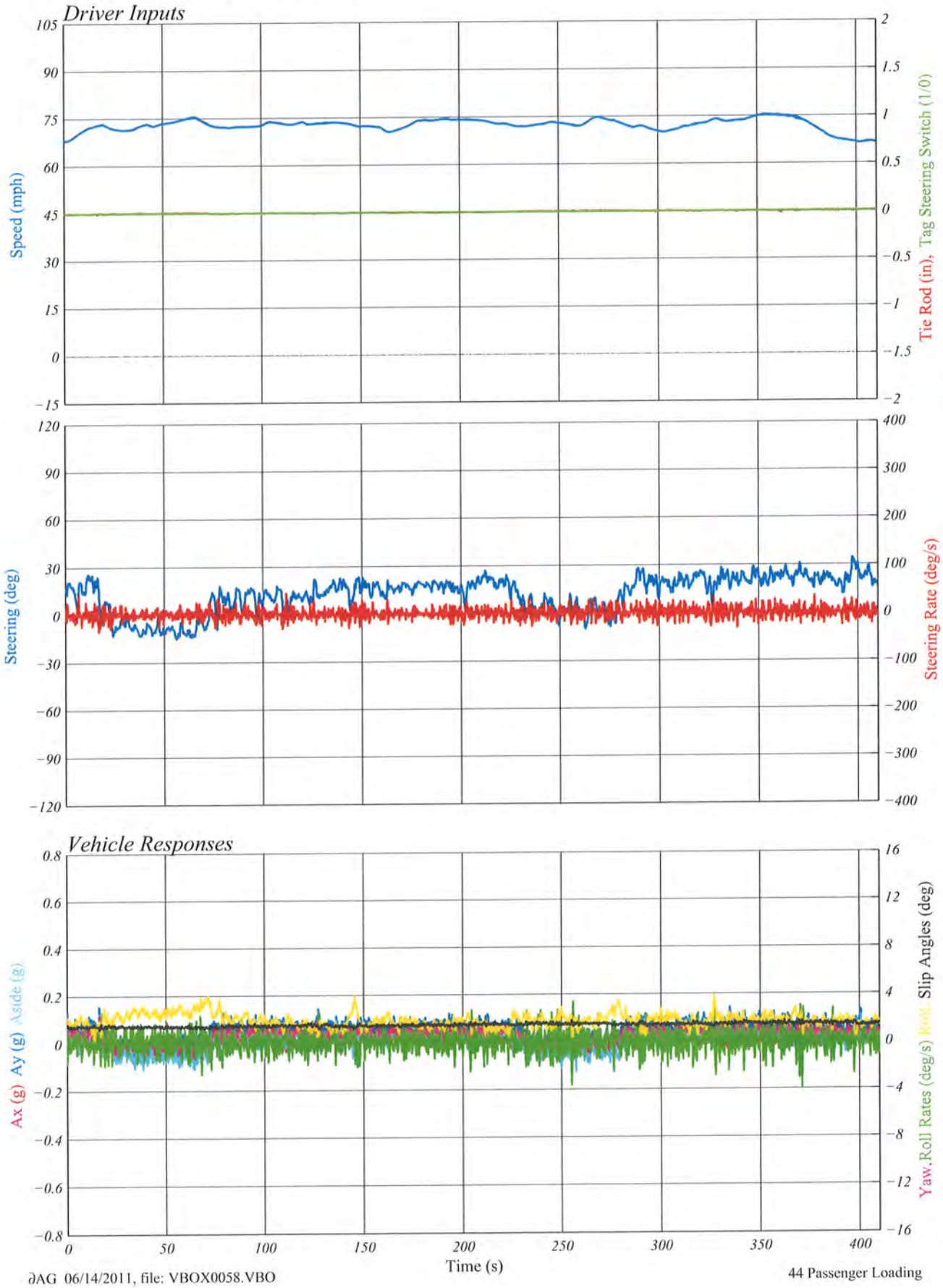
∂AG 06/14/2011, file: VBOX0057.VBO

44 Passenger Loading

Test: 57

1995 MCI 102DL3

Modified U−joint Bearing − Lap 10



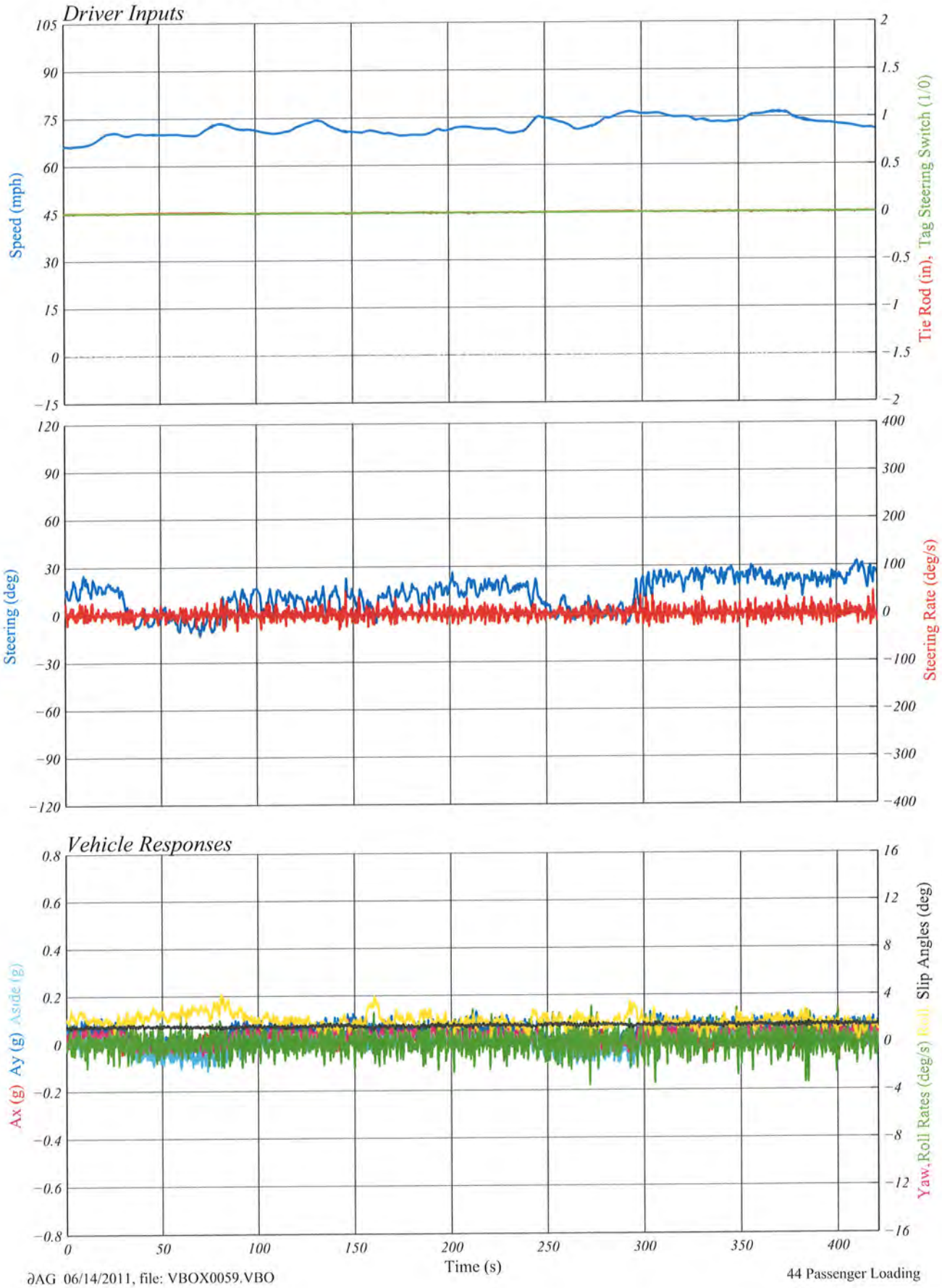
∂AG 06/14/2011, file: VBOX0058.VBO

44 Passenger Loading

Test: 58

1995 MCI 102DL3

Modified U−joint Bearing − Lap 11



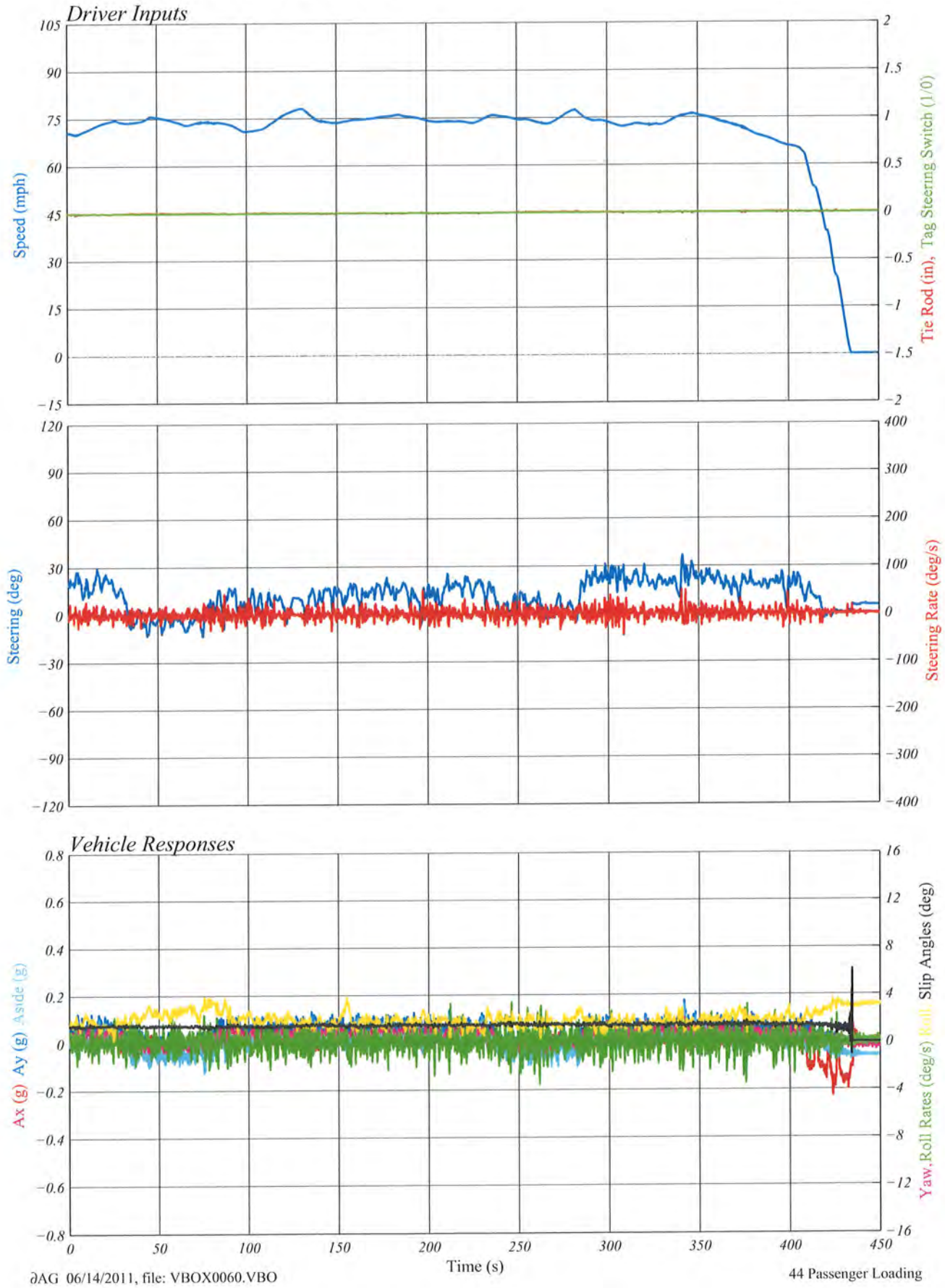
∂AG 06/14/2011, file: VBOX0059.VBO

44 Passenger Loading

Test: 59

1995 MCI 102DL3

Modified U–joint Bearing – Lap 12

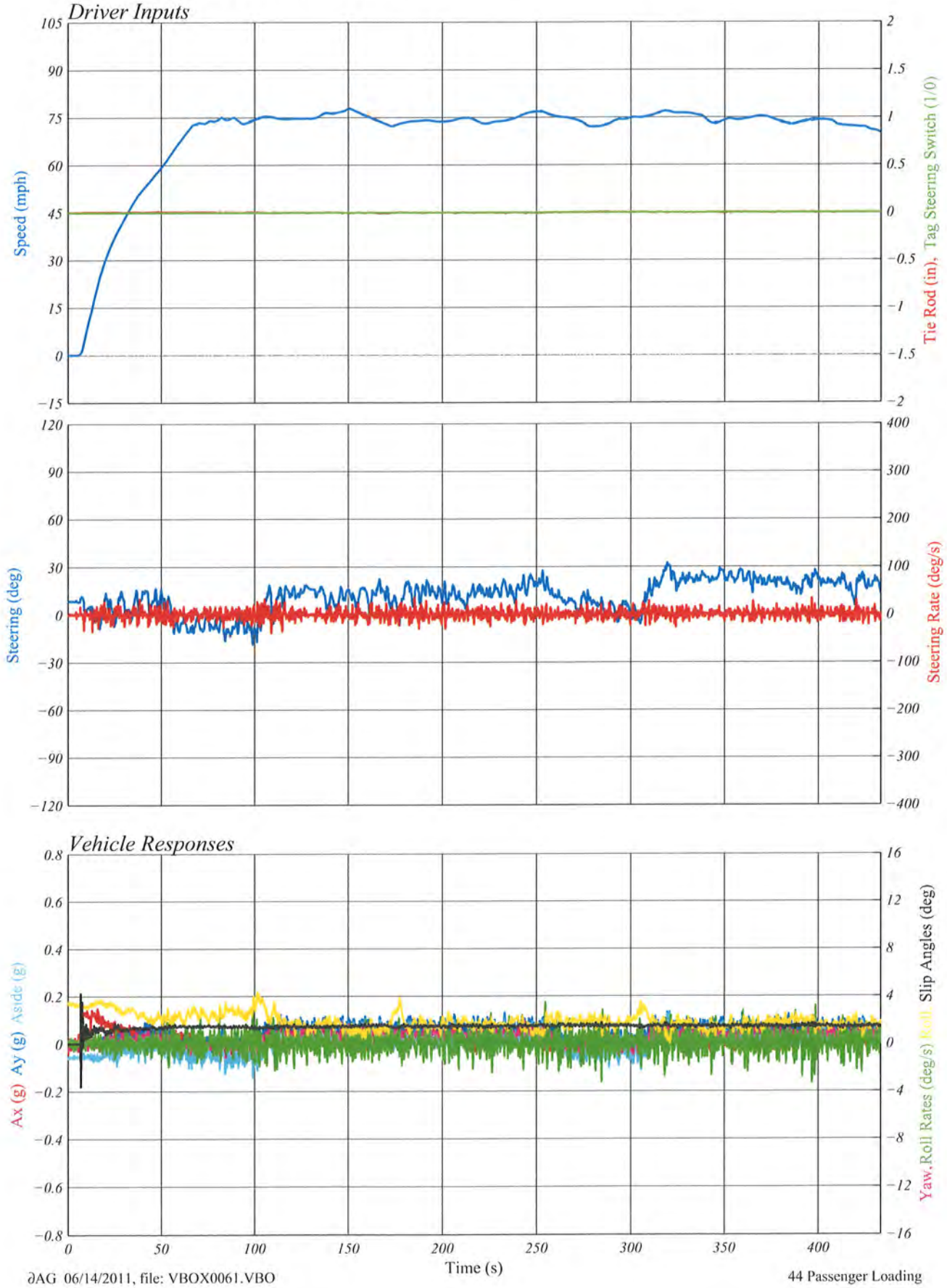


∂AG 06/14/2011, file: VBOX0060.VBO

44 Passenger Loading

Test: 60 1995 MCI 102DL3

Modified U−joint Bearing − Lap 13



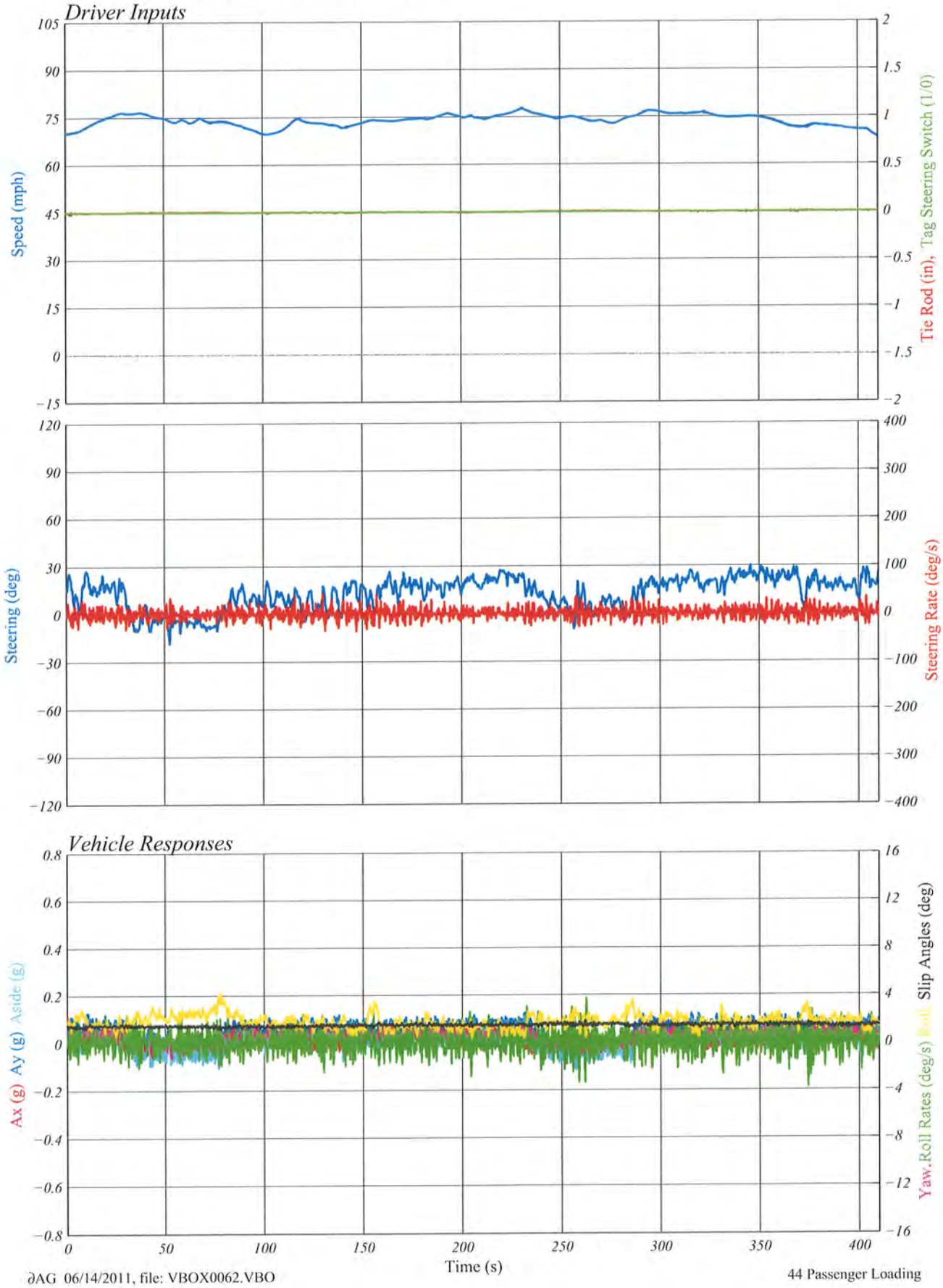
∂AG 06/14/2011, file: VBOX0061.VBO

44 Passenger Loading

Test: 61

1995 MCI 102DL3

Modified U–joint Bearing – Lap 14



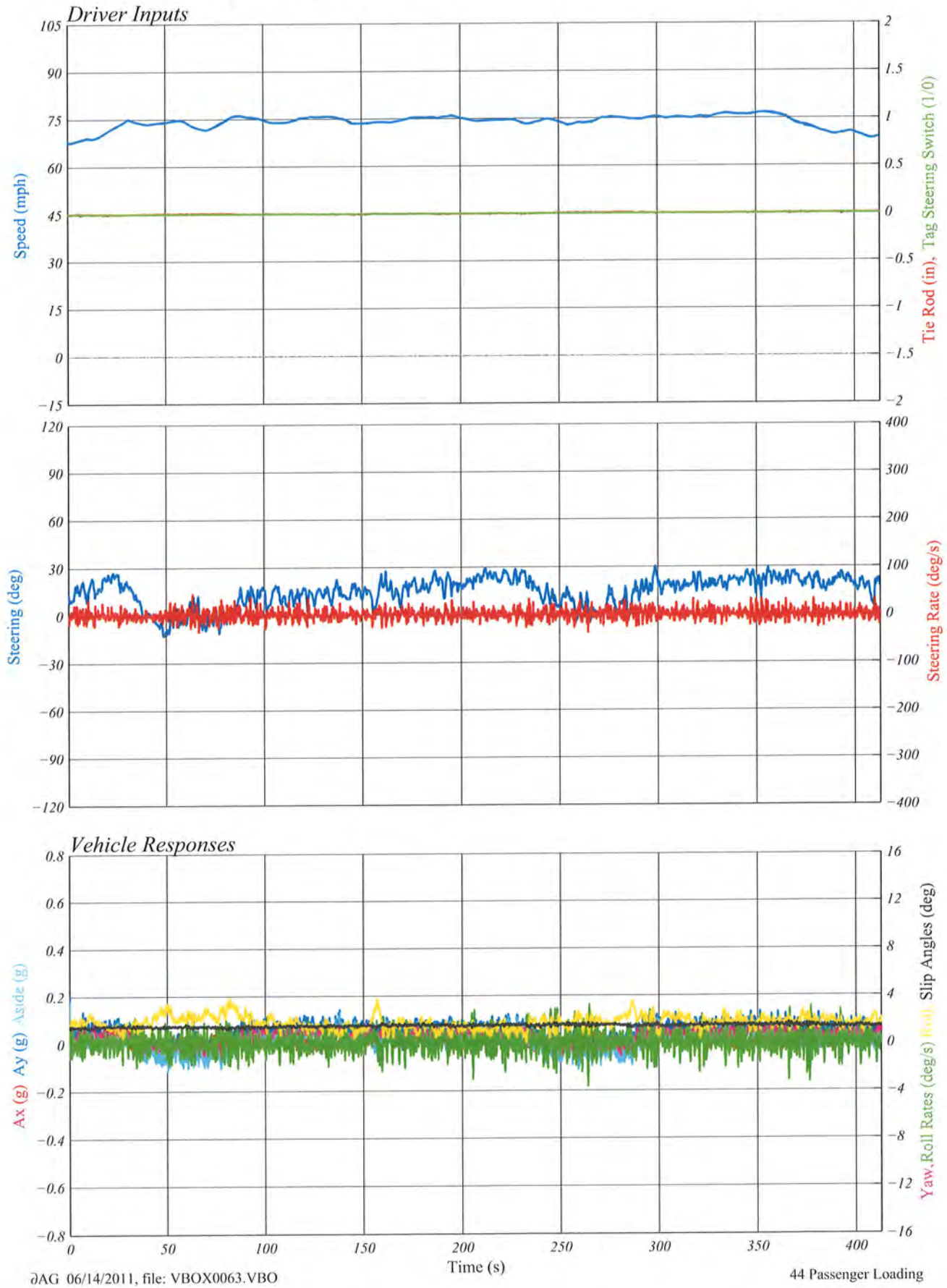
∂AG 06/14/2011, file: VBOX0062.VBO

44 Passenger Loading

Test: 62

1995 MCI 102DL3

Modified U–joint Bearing – Lap 15



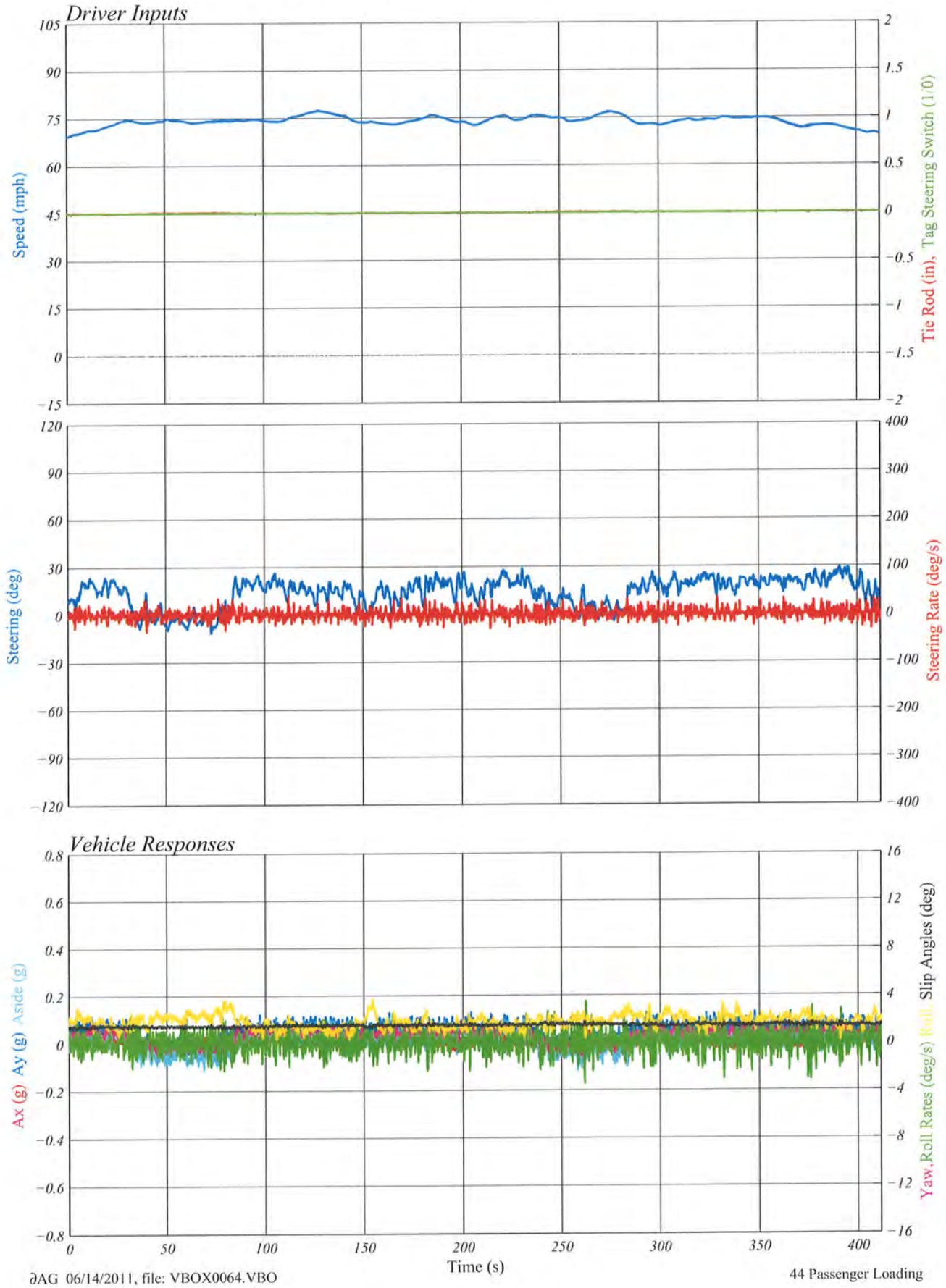
∂AG 06/14/2011, file: VBOX0063.VBO

44 Passenger Loading

Test: 63

1995 MCI 102DL3

Modified U–joint Bearing – Lap 16



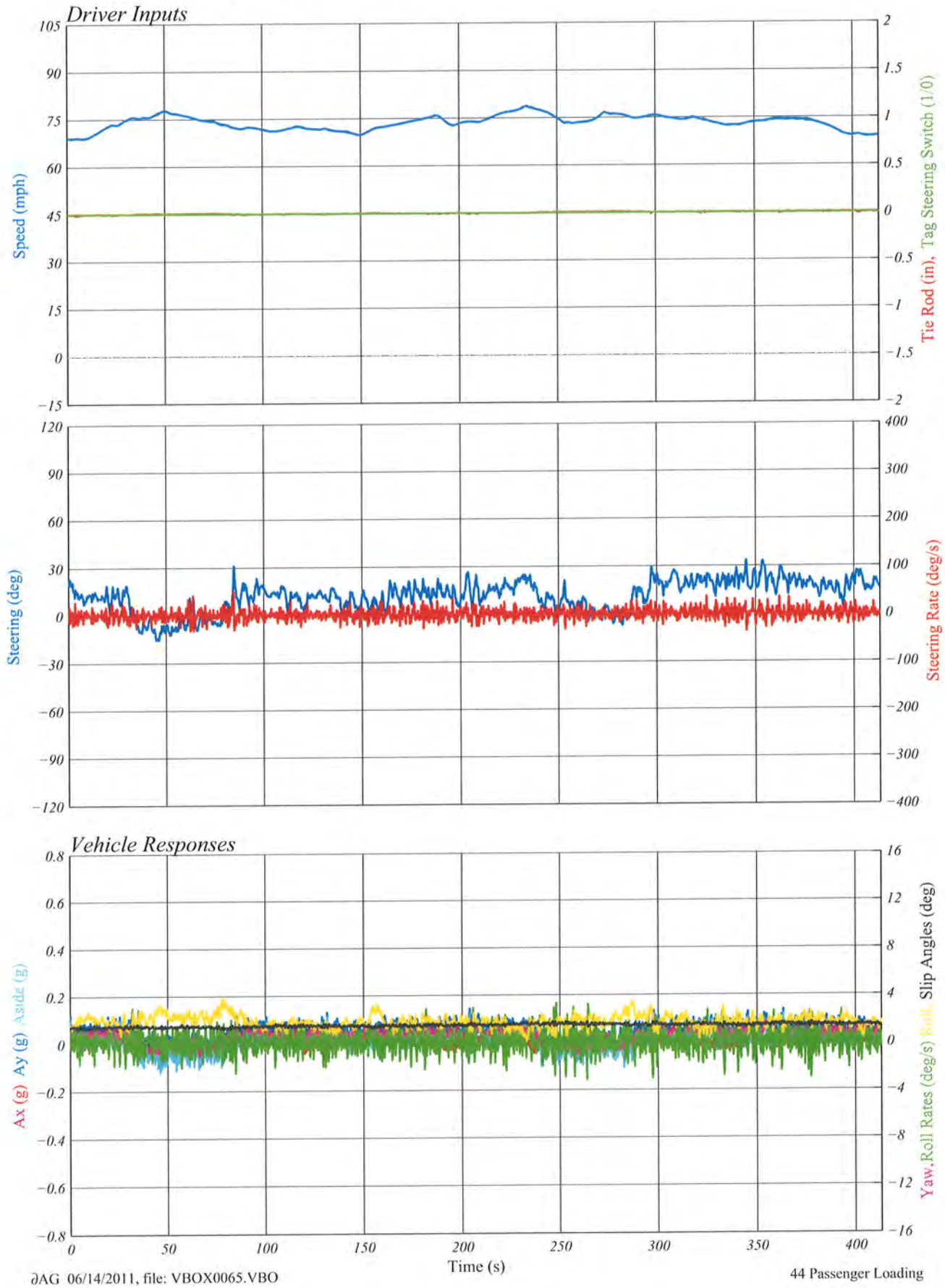
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44 Passenger Loading

Test: 64

1995 MCI 102DL3

Modified U–joint Bearing – Lap 17



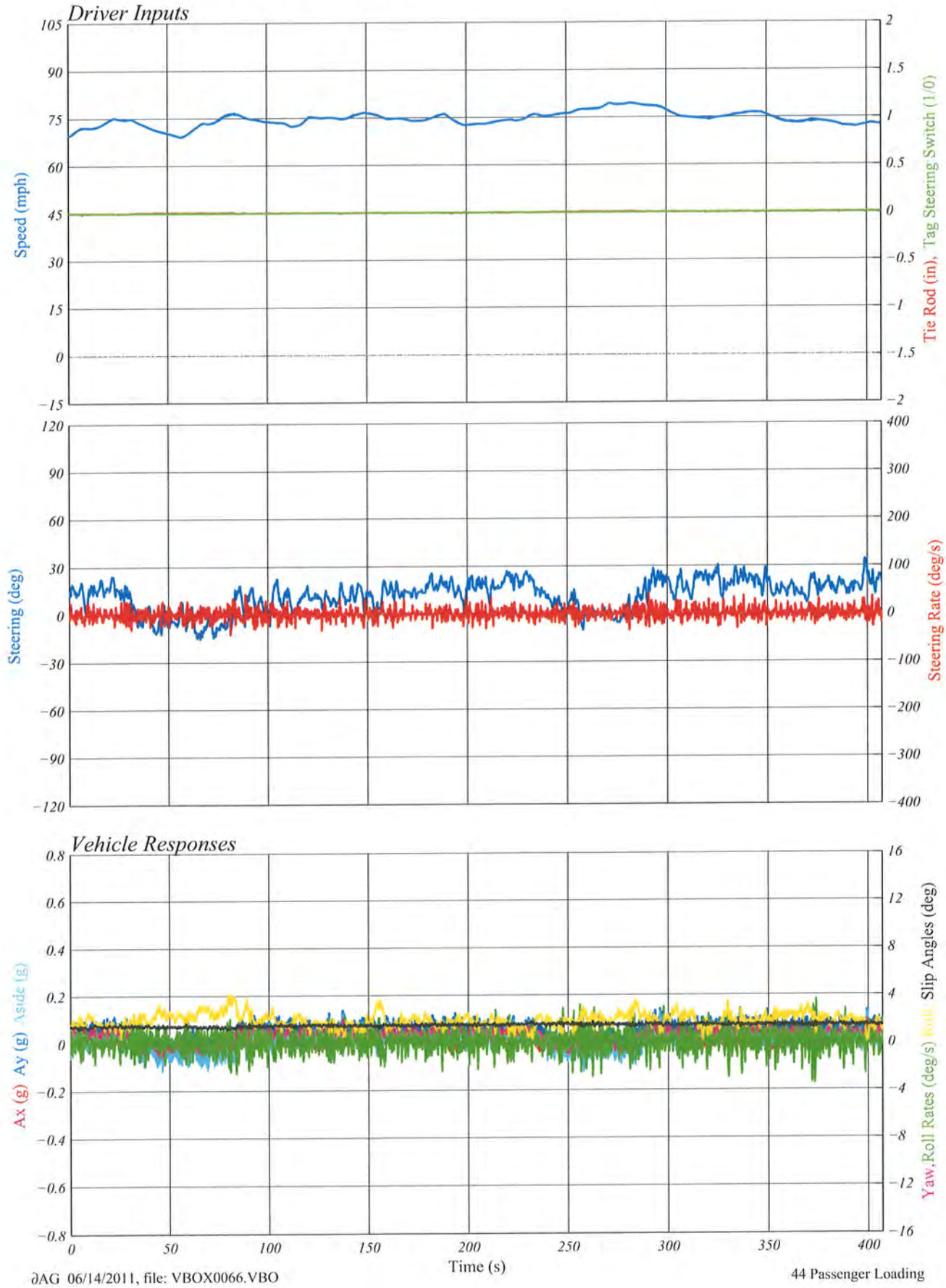
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44 Passenger Loading

Test: 65

1995 MCI 102DL3

Modified U–joint Bearing – Lap 18



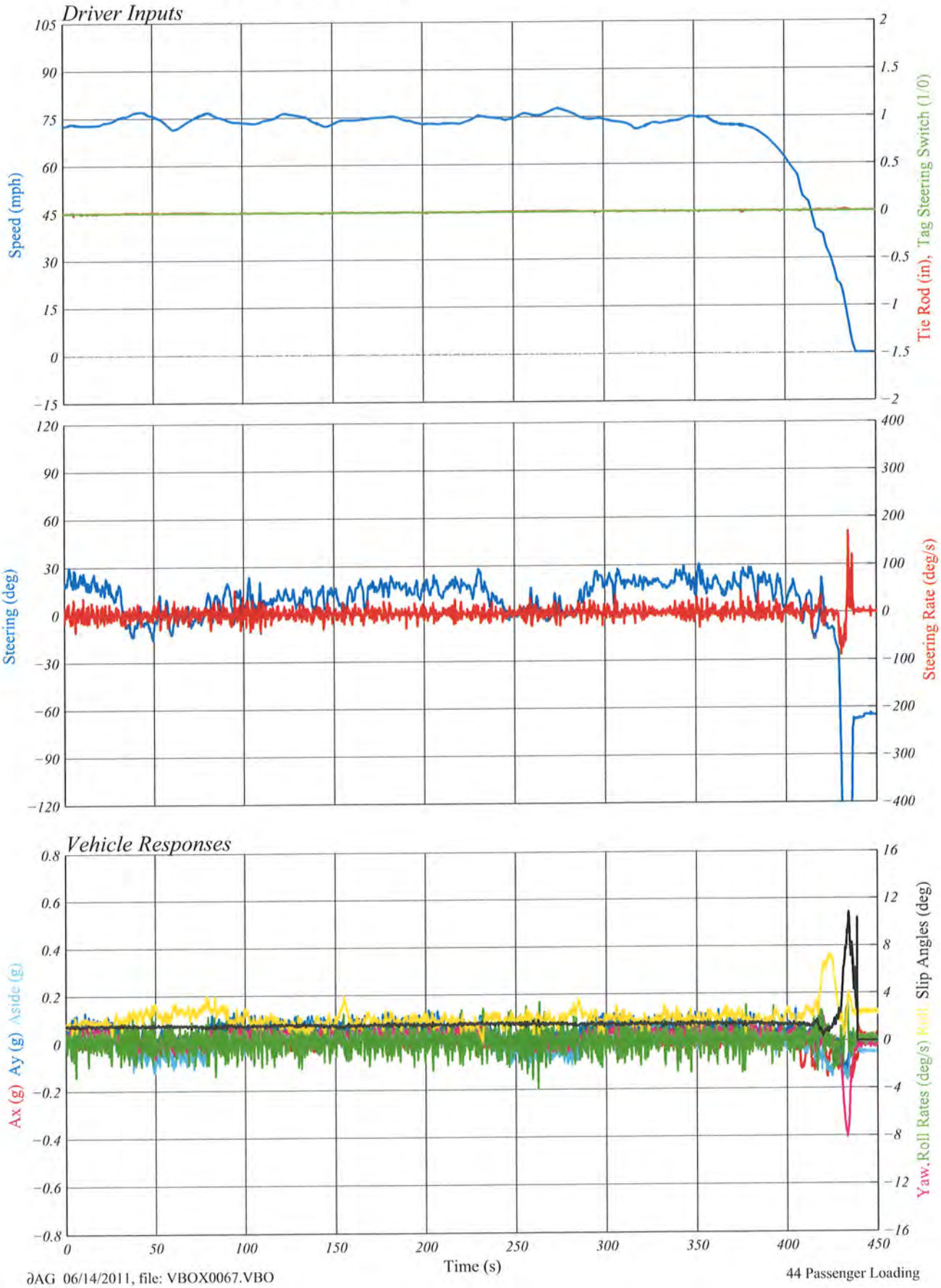
∂AG 06/14/2011, file: VBOX0066.VBO

44 Passenger Loading

Test: 66

1995 MCI 102DL3

Modified U–joint Bearing – Lap 19



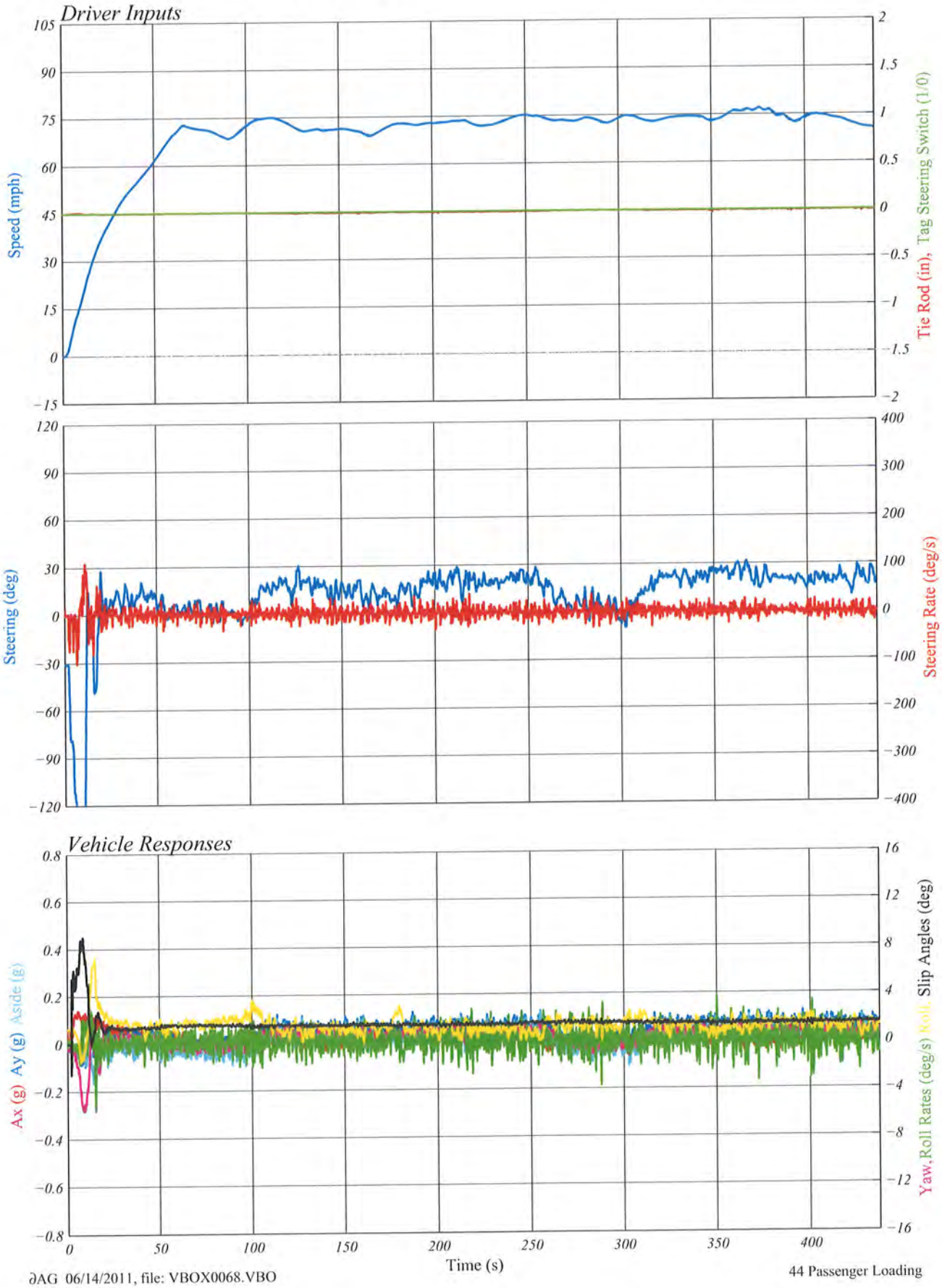
∂AG 06/14/2011, file: VBOX0067.VBO

44 Passenger Loading

Test: 67

1995 MCI 102DL3

Modified U–joint Bearing – Lap 20



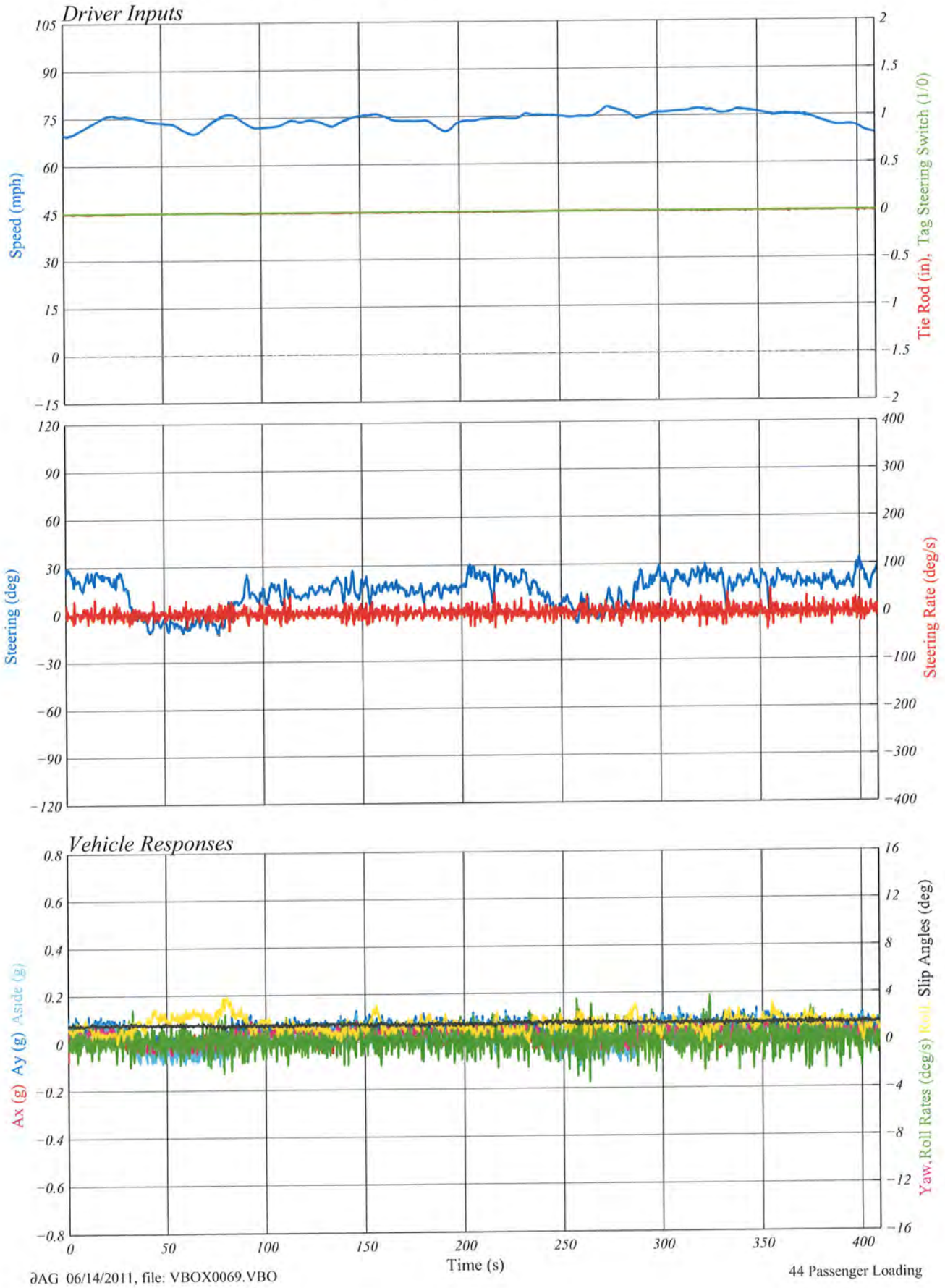
∂AG 06/14/2011, file: VBOX0068.VBO

44 Passenger Loading

Test: 68

1995 MCI 102DL3

Modified U–joint Bearing – Lap 21



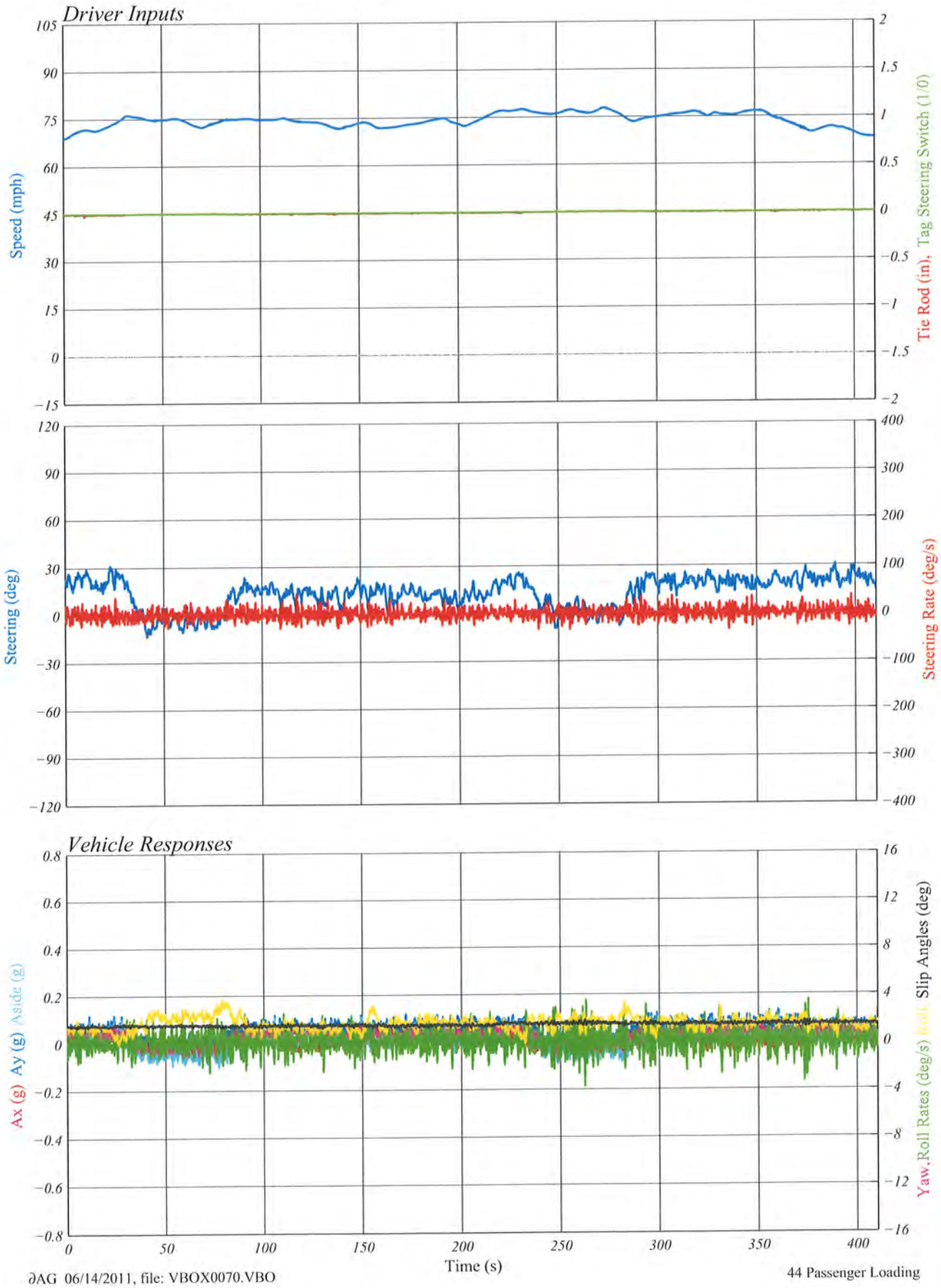
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44 Passenger Loading

Test: 69

1995 MCI 102DL3

Modified U–joint Bearing – Lap 22



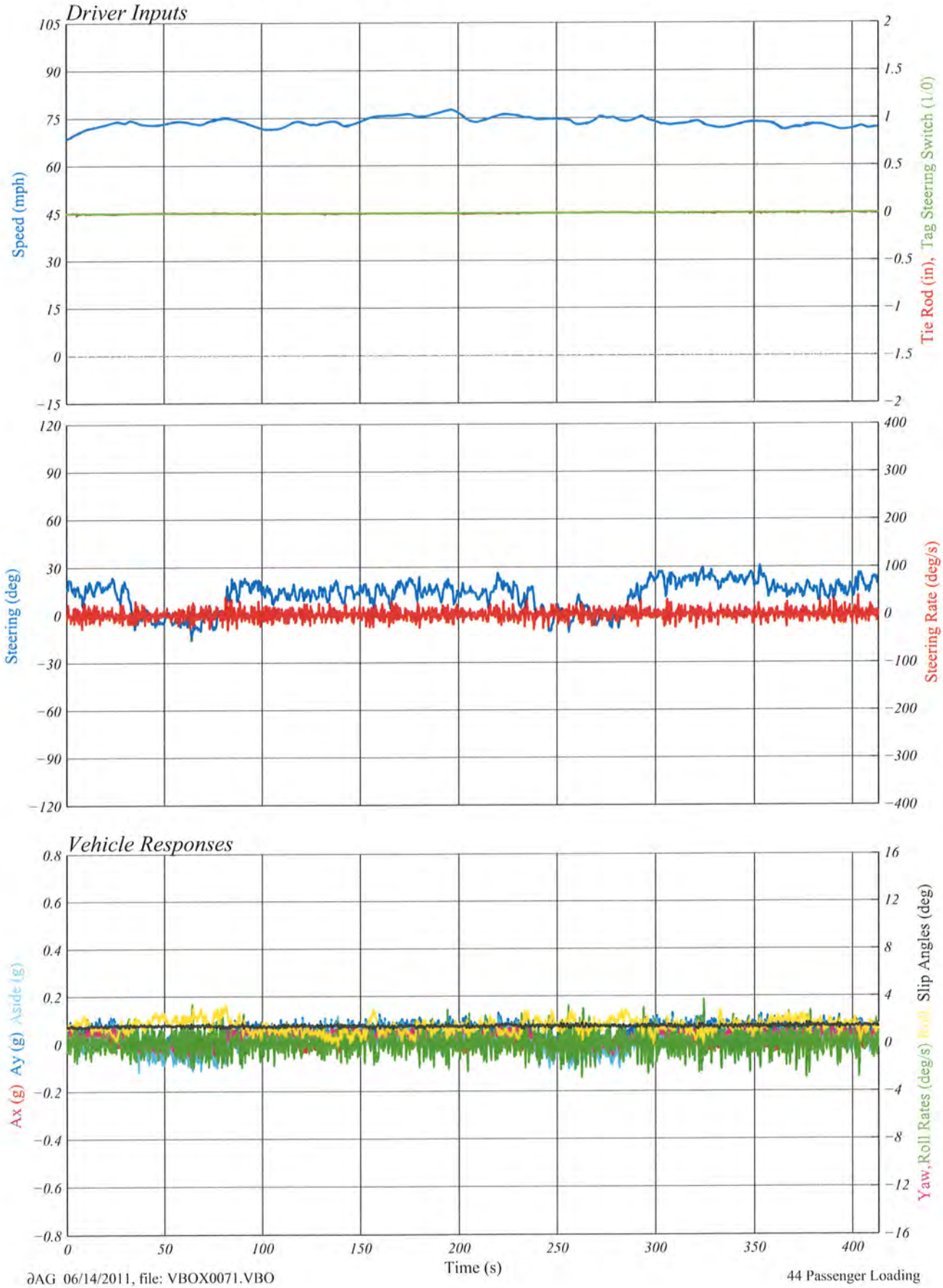
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44 Passenger Loading

Test: 70

1995 MCI 102DL3

Modified U−joint Bearing − Lap 23



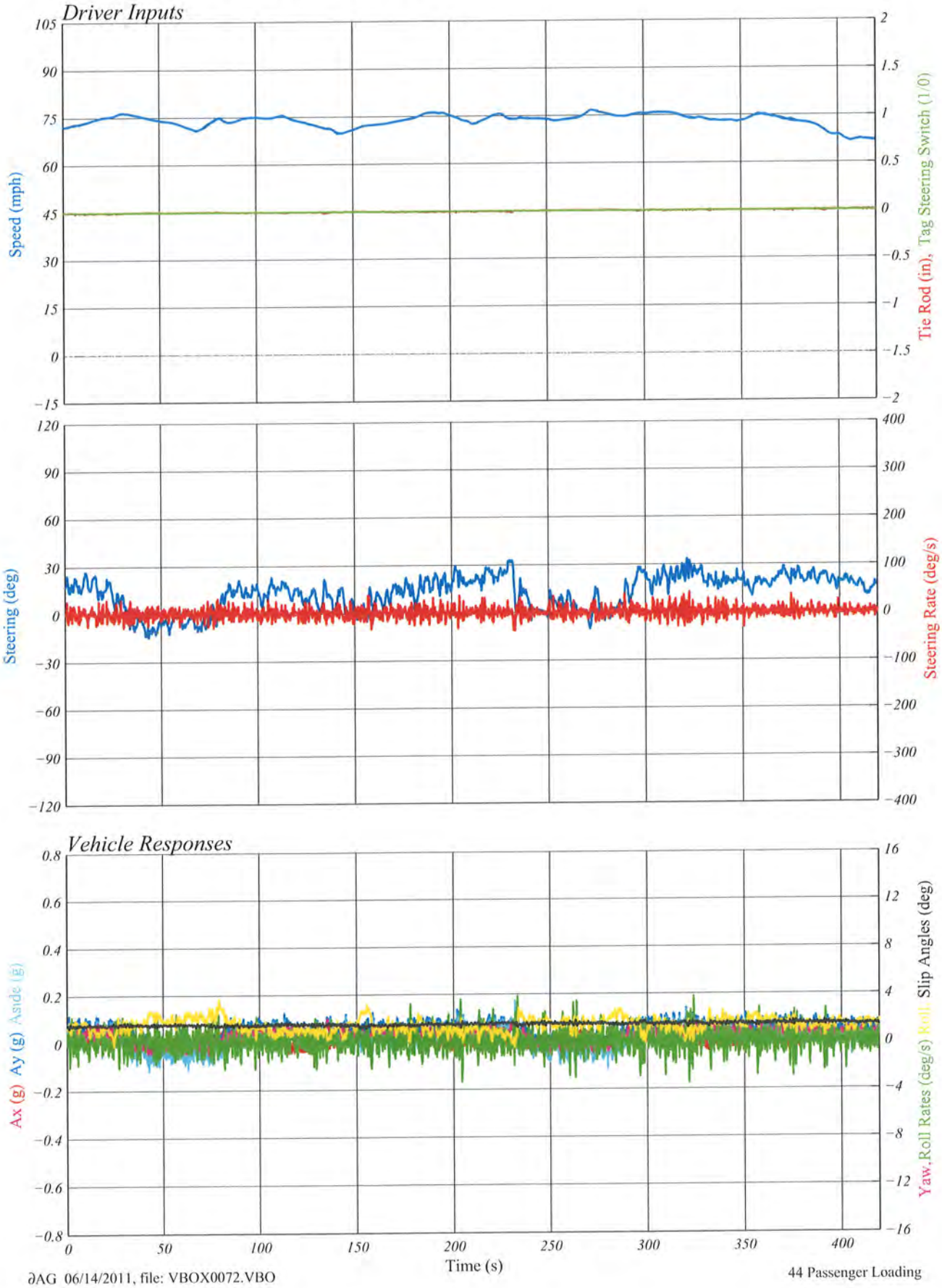
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44 Passenger Loading

Test: 71

1995 MCI 102DL3

Modified U−joint Bearing − Lap 24



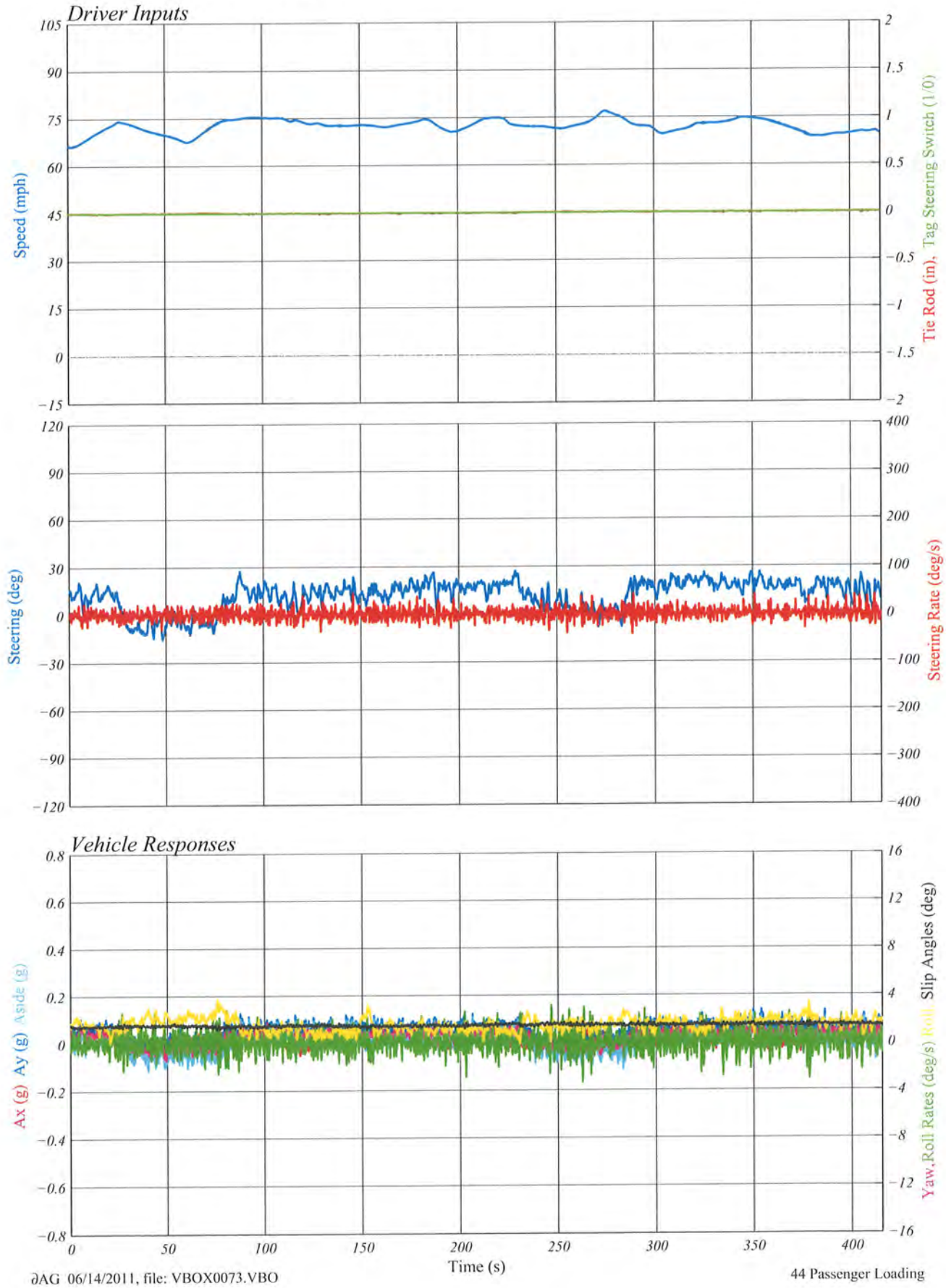
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44 Passenger Loading

Test: 72

1995 MCI 102DL3

Modified U–joint Bearing – Lap 25



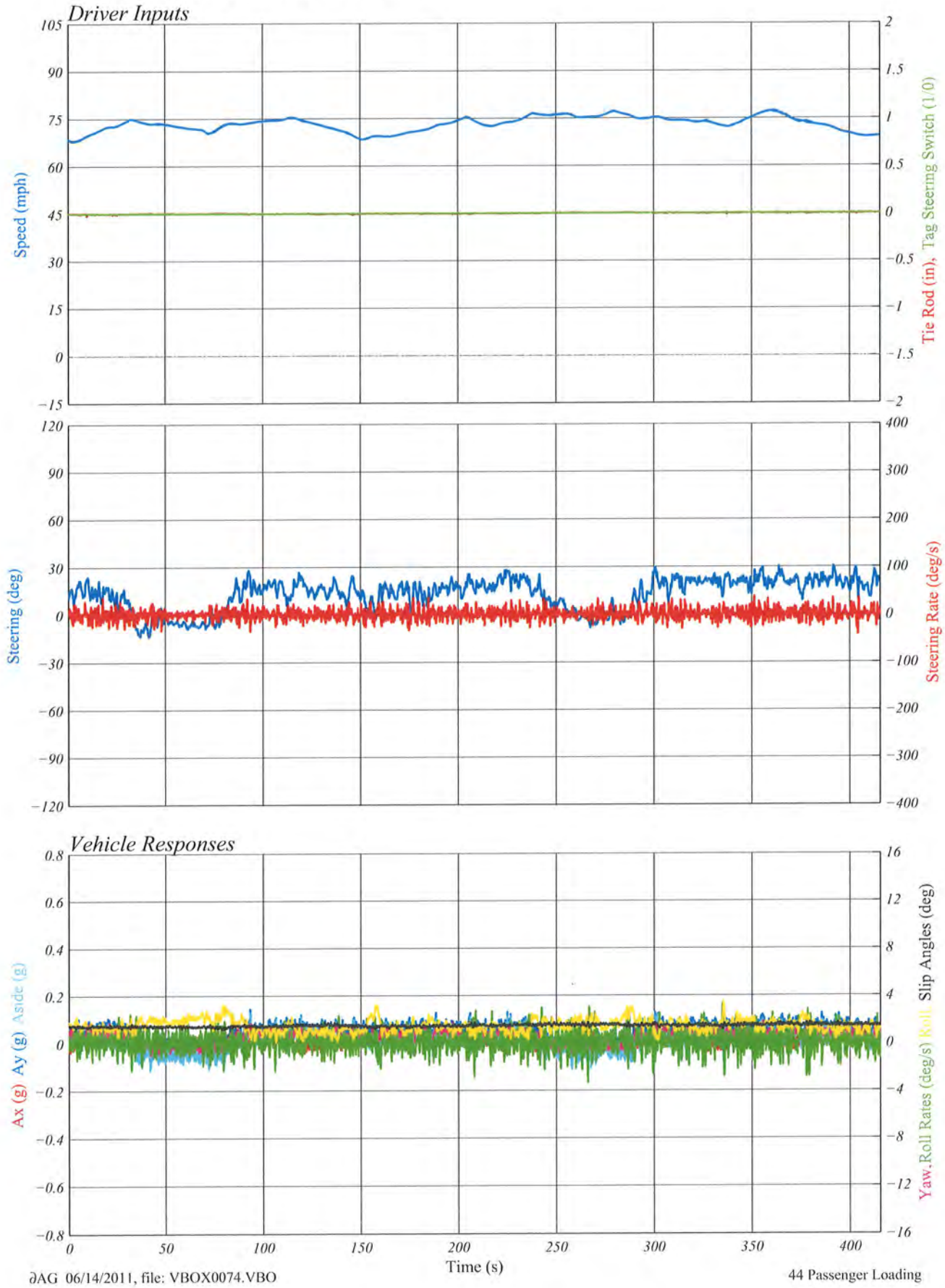
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44 Passenger Loading

Test: 73

1995 MCI 102DL3

Modified U–joint Bearing – Lap 26



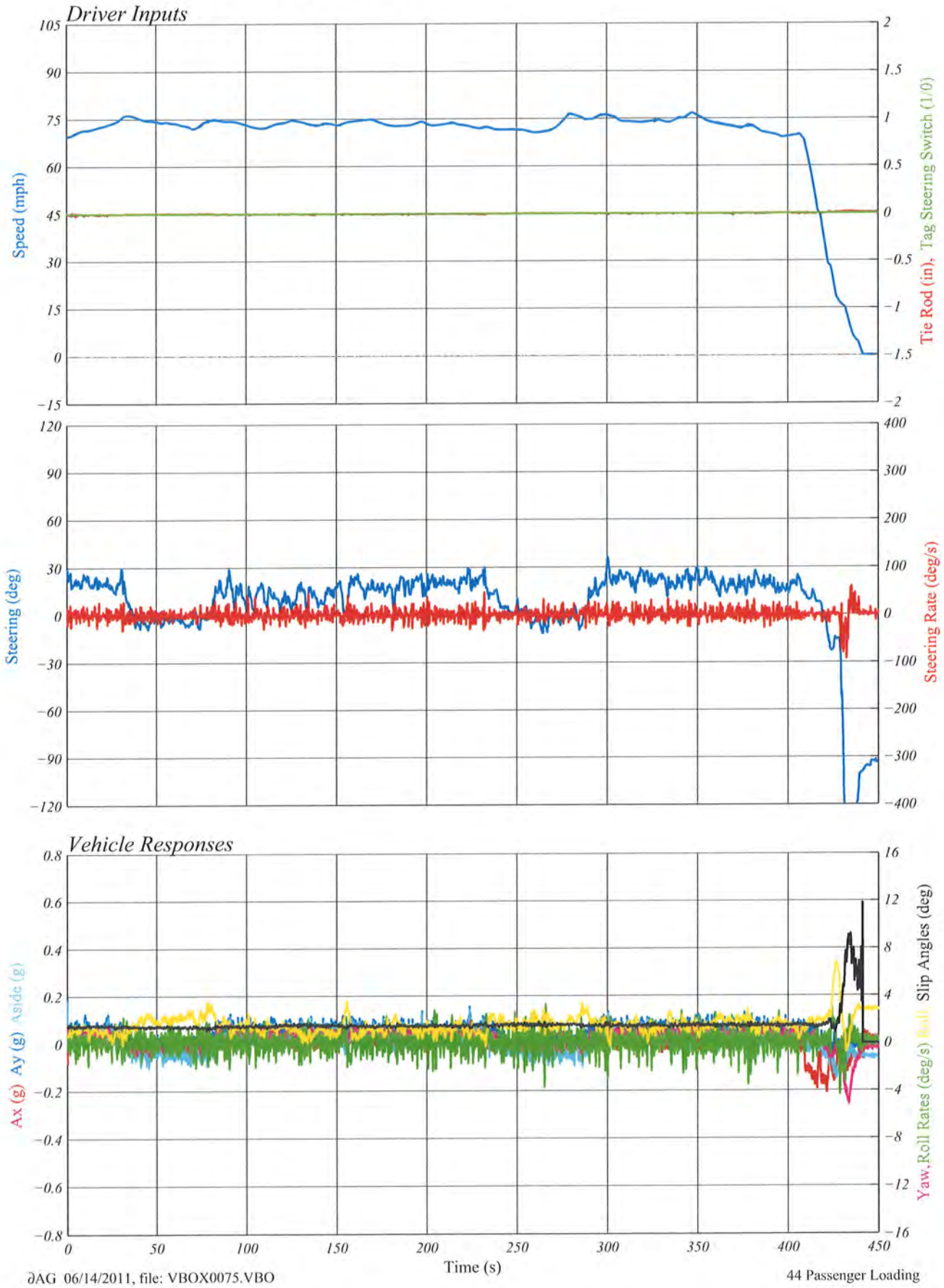
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44 Passenger Loading

Test: 74

1995 MCI 102DL3

Modified U−joint Bearing − Lap 27



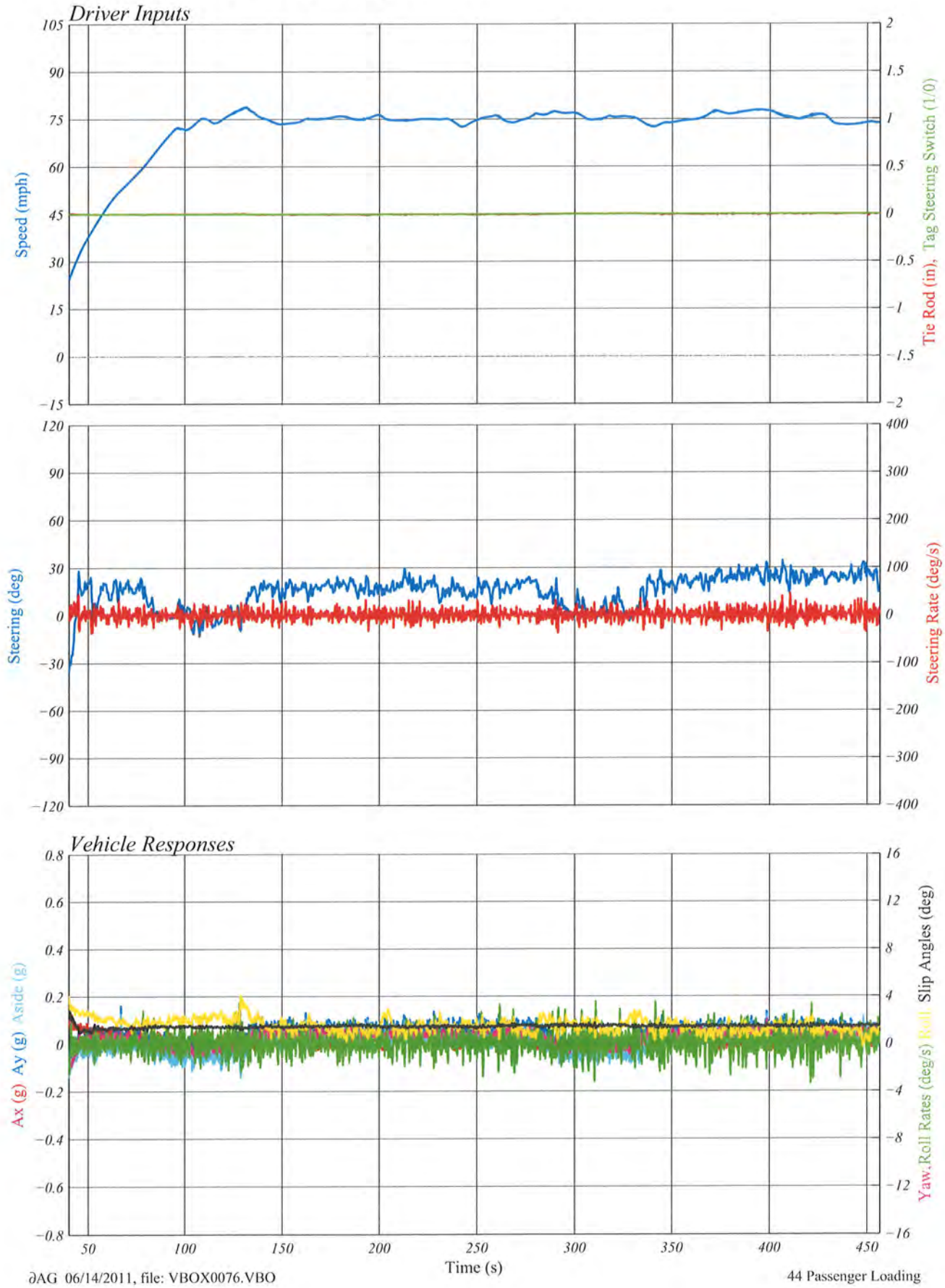
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Test: 75

1995 MCI 102DL3

Modified U−joint Bearing − Lap 28



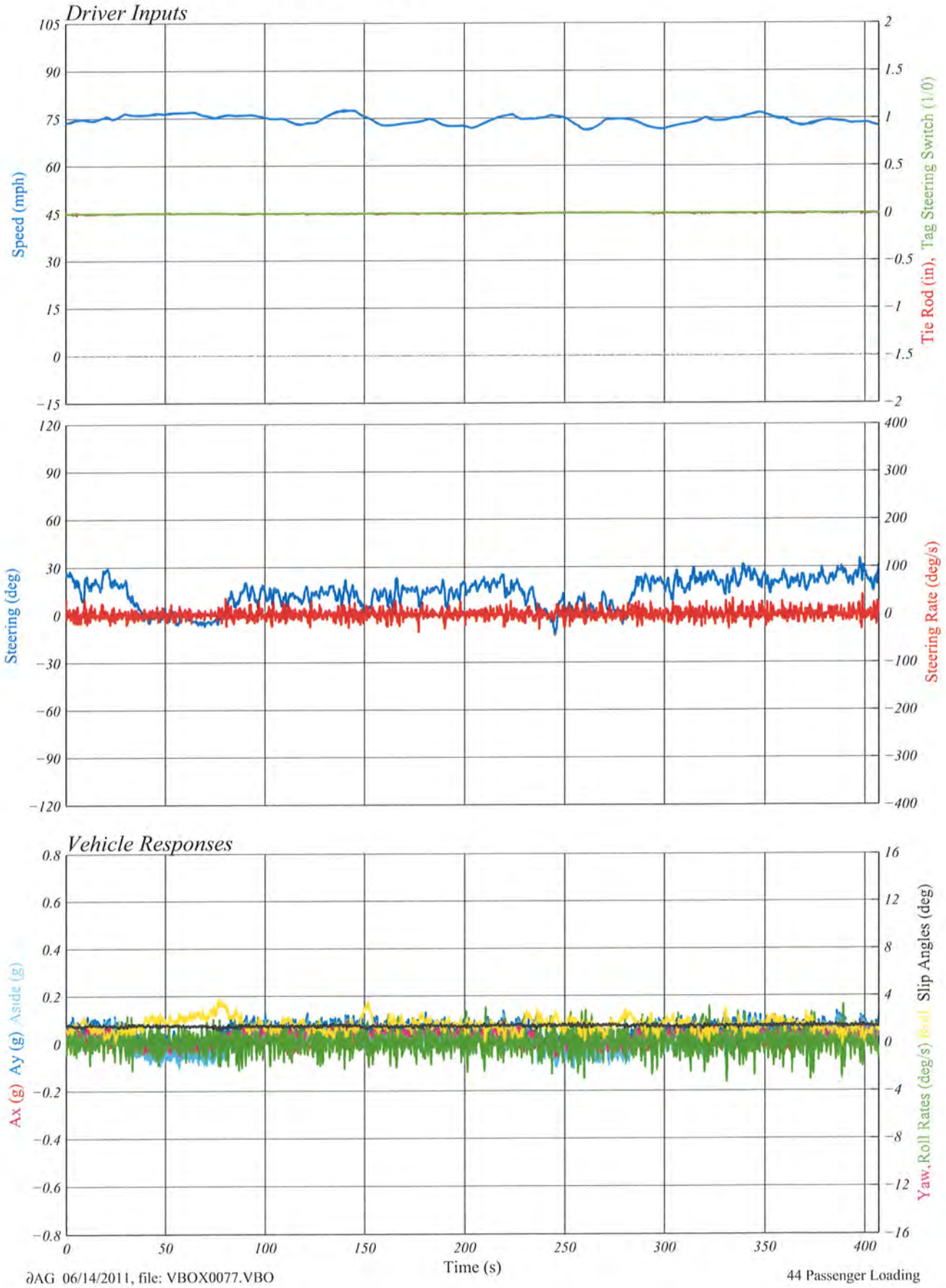
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44 Passenger Loading

Test: 76

1995 MCI 102DL3

Modified U−joint Bearing − Lap 29



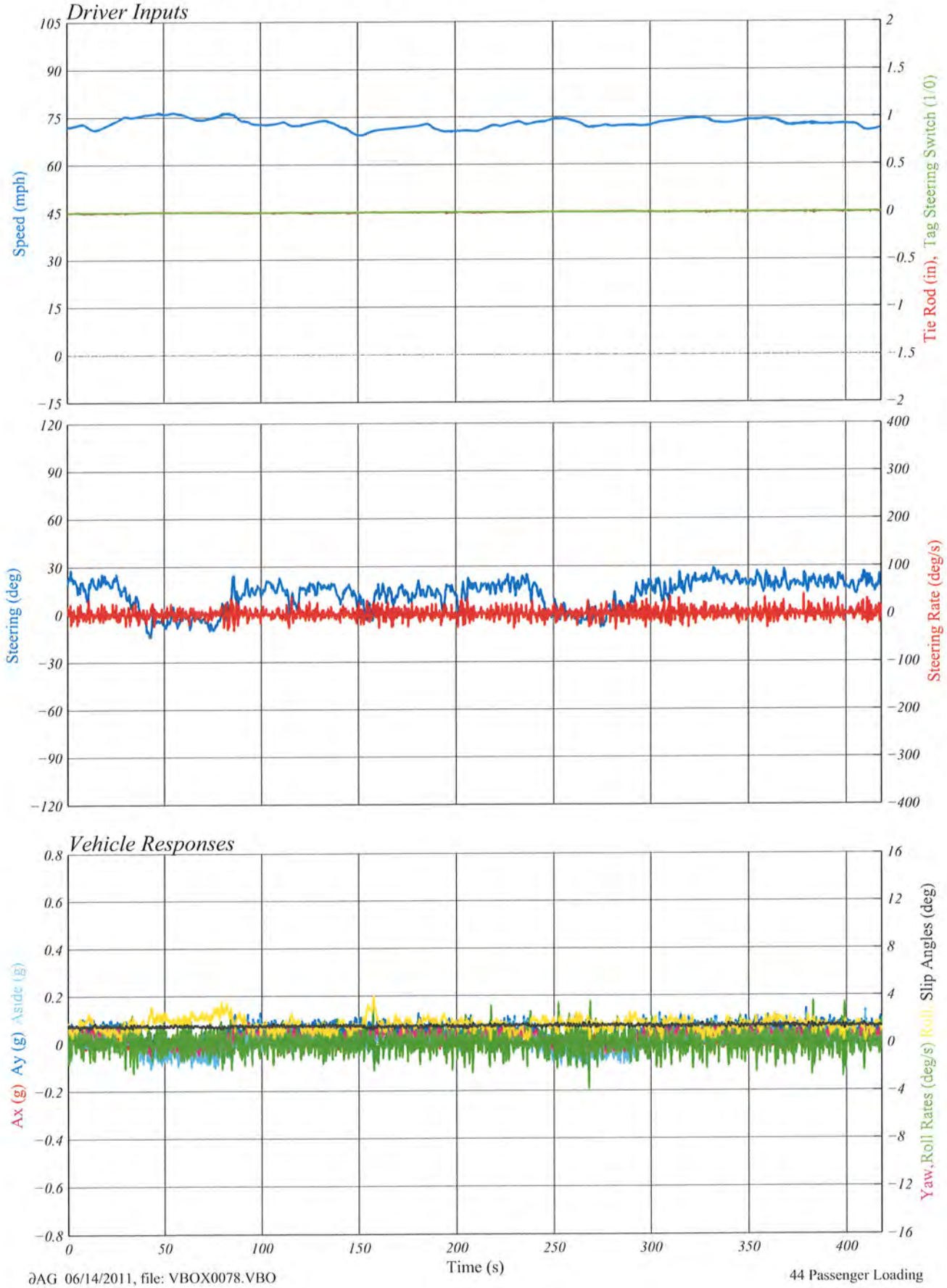
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Test: 77

1995 MCI 102DL3

Modified U–joint Bearing – Lap 30



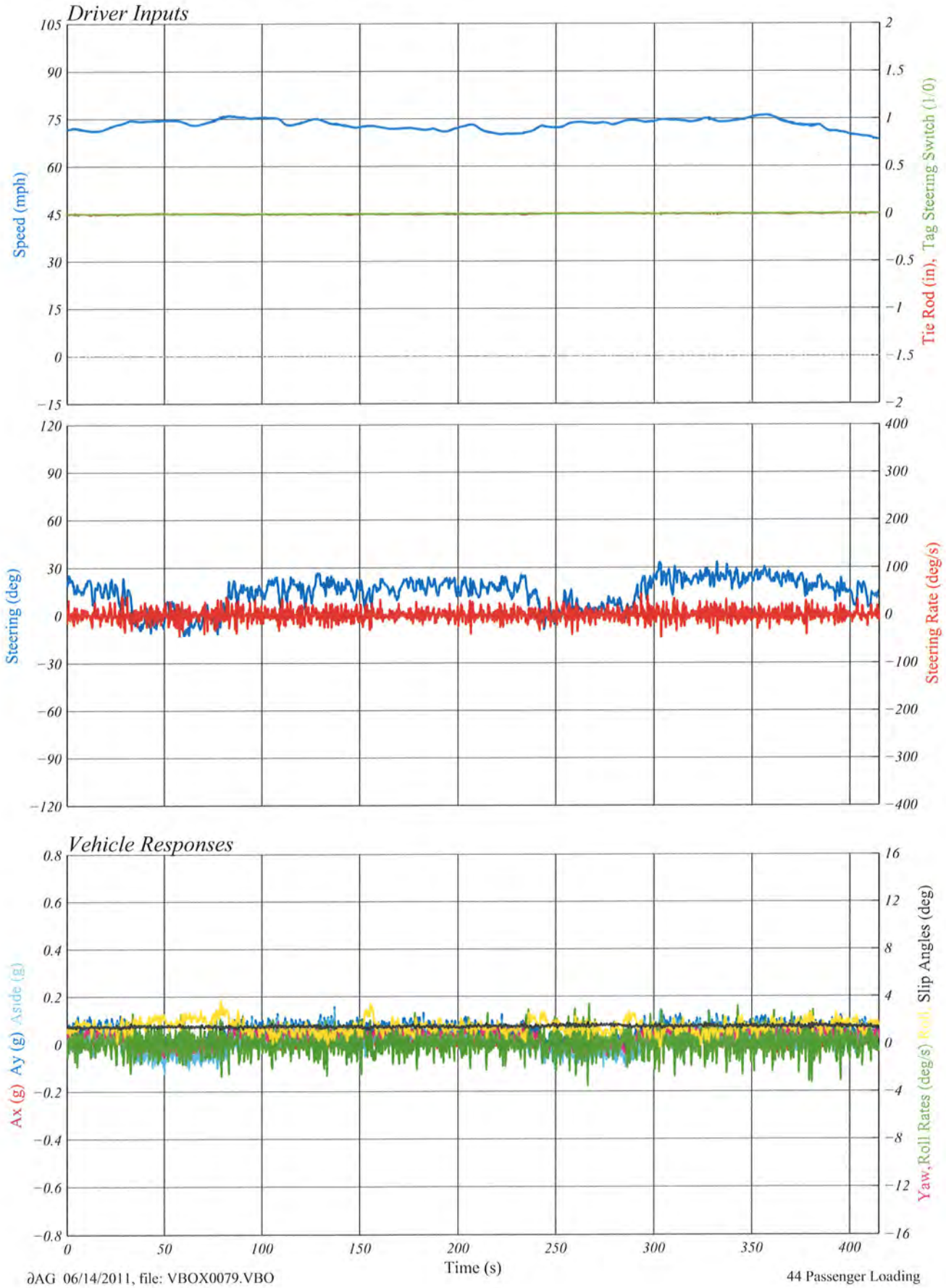
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Test: 78

1995 MCI 102DL3

Modified U−joint Bearing − Lap 31

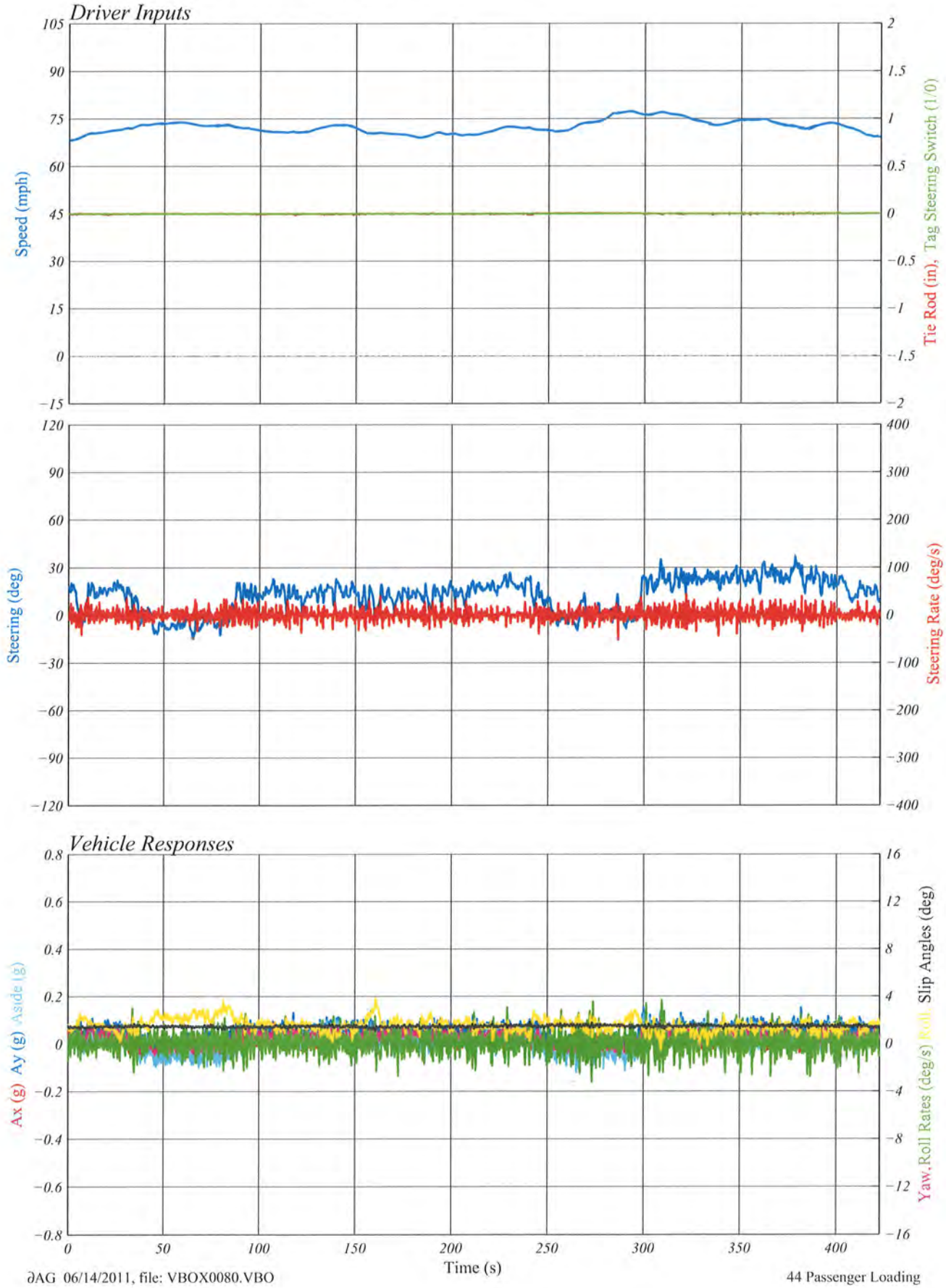


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Test: 79 1995 MCI 102DL3

Modified U−joint Bearing − Lap 32

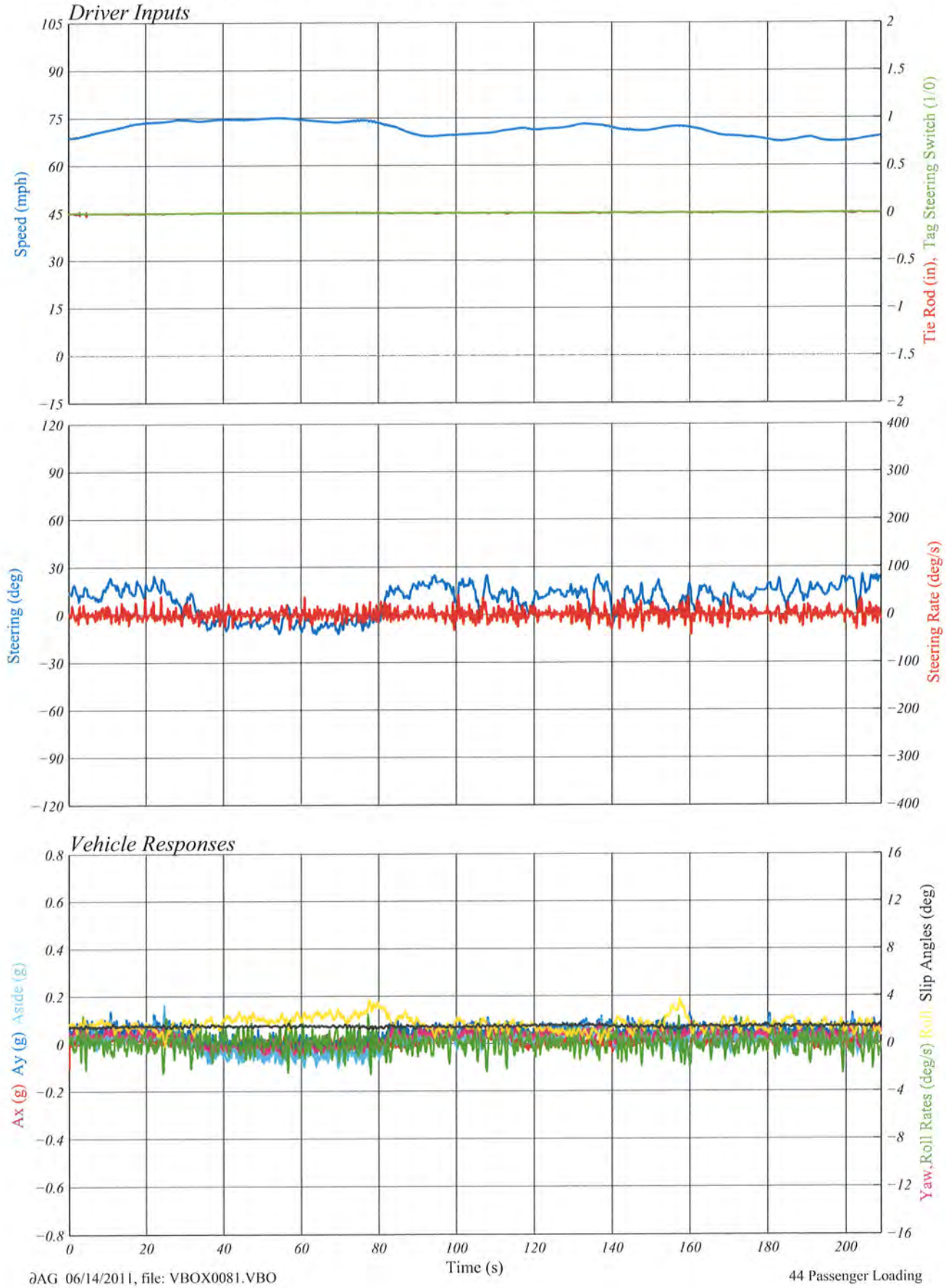


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44 Passenger Loading

Test: 80 1995 MCI 102DL3

Modified U−joint Bearing − Lap 33, first half

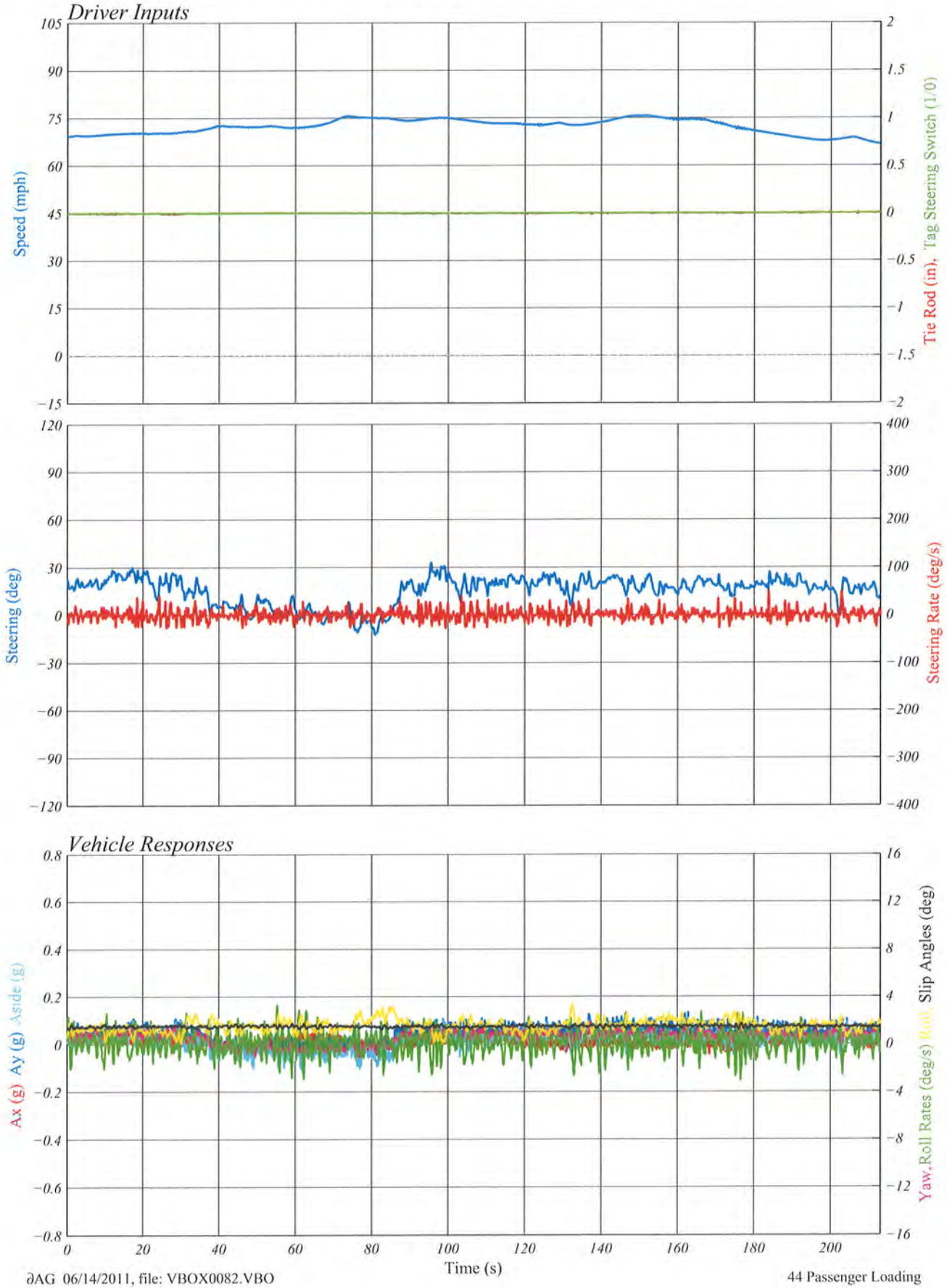


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44 Passenger Loading

Test: 81 1995 MCI 102DL3

Modified U−joint Bearing − Lap 33, second half



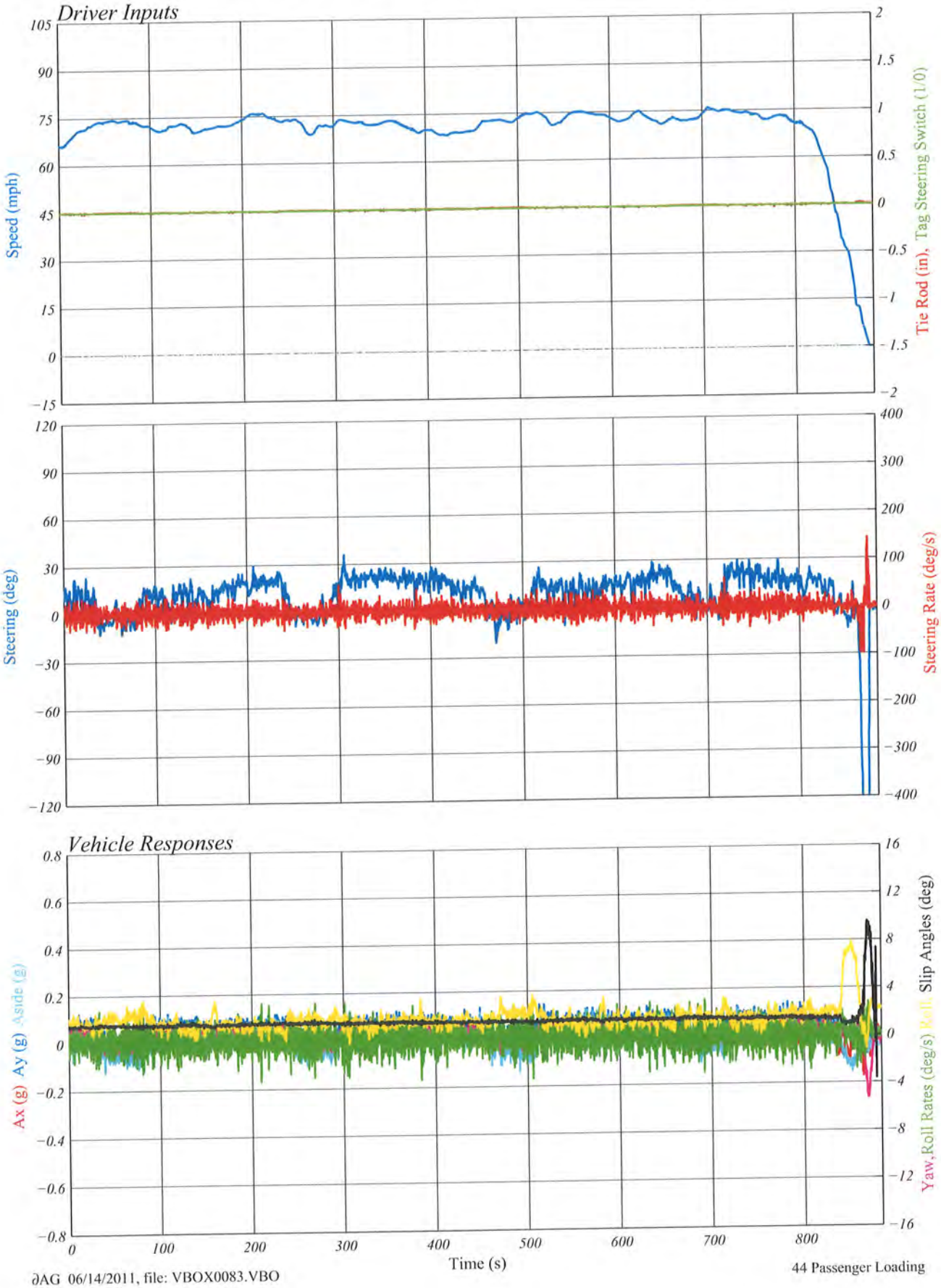
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44 Passenger Loading

Test: 82

1995 MCI 102DL3

Modified U–joint Bearing – Laps 34 & 35



∂AG 06/14/2011, file: VBOX0083.VBO

44 Passenger Loading

Analysis 8

1995 MCI 102DL3 Vehicle Testing

Driveshaft & U-Joints

Inspection, Disassembly, & Modification

June 12-14, 2011

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Vehicle.png



Vehicle_2886.jpg



Vehicle_2887.jpg



Vehicle_2888.jpg

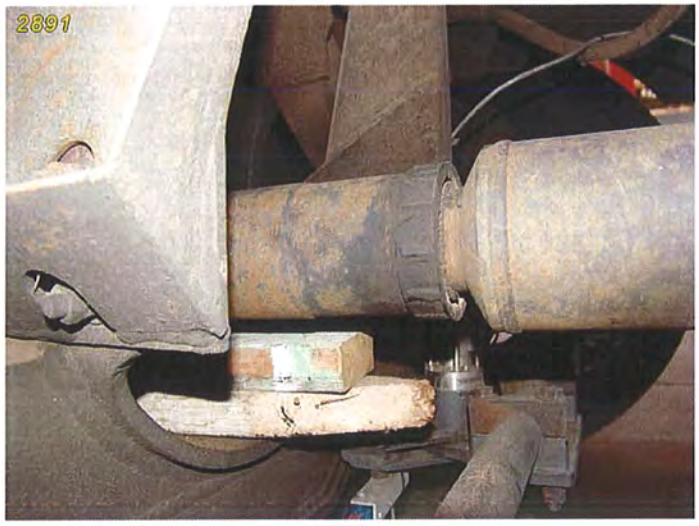


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Vehicle_2890.jpg

1995 MCI 102DL3 Vehicle Testing



Vehicle_2891.jpg



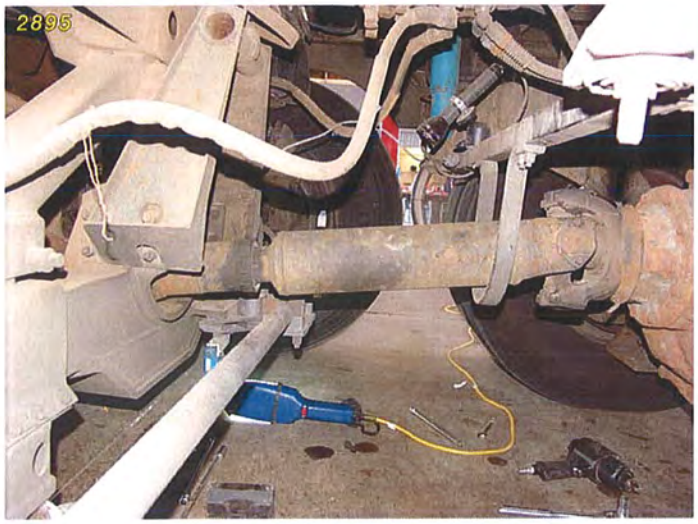
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Vehicle_2896.jpg

1995 MCI 102DL3 Vehicle Testing



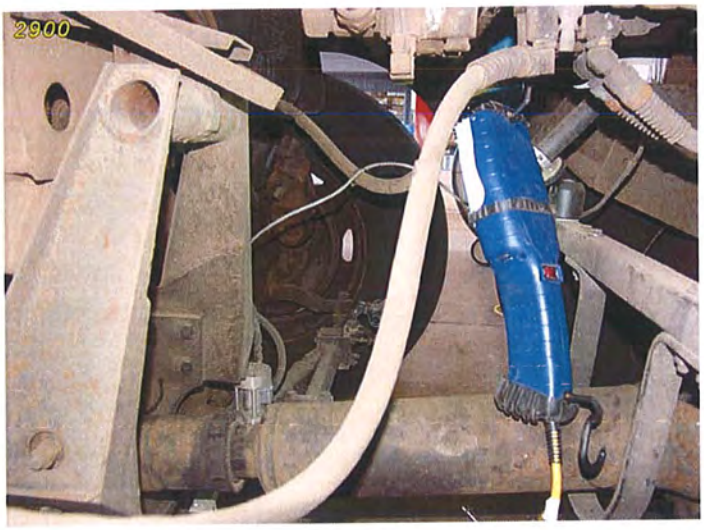
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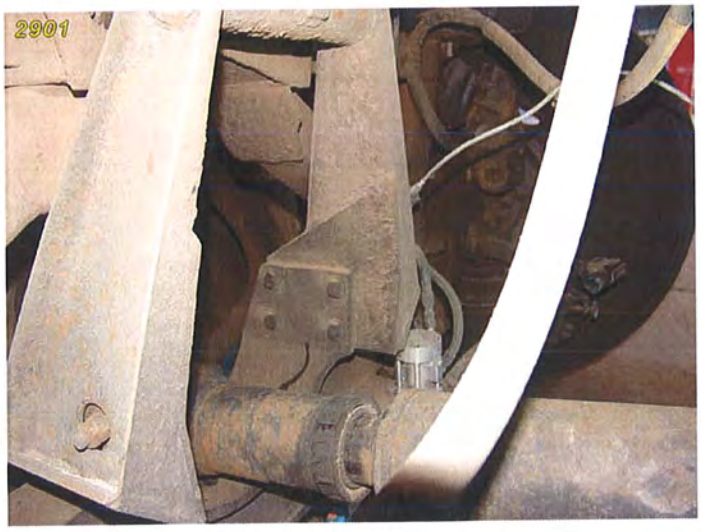
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Vehicle_2899.jpg



Vehicle_2900.jpg



Vehicle_2901.jpg



Vehicle_2902.jpg

1995 MCI 102DL3 Vehicle Testing



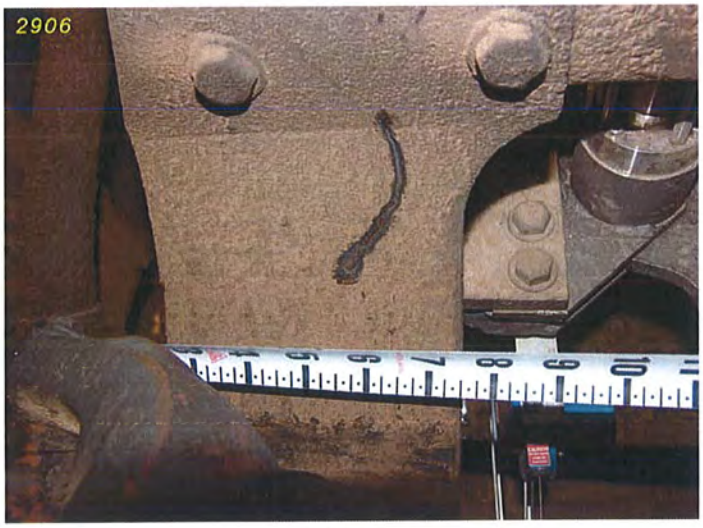
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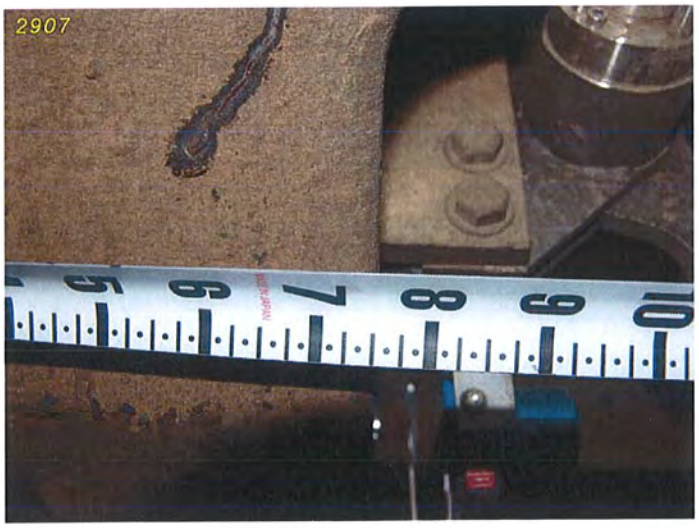
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Vehicle_2905.jpg



Vehicle_2906.jpg

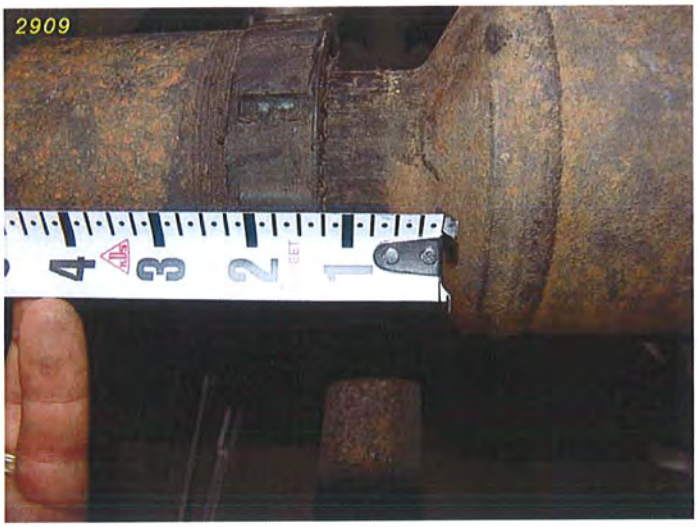


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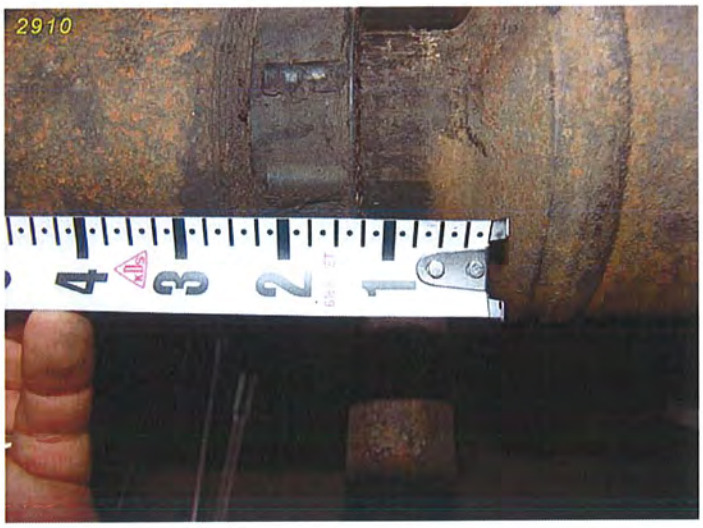


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1995 MCI 102DL3 Vehicle Testing



Vehicle_2909.jpg



Vehicle_2910.jpg



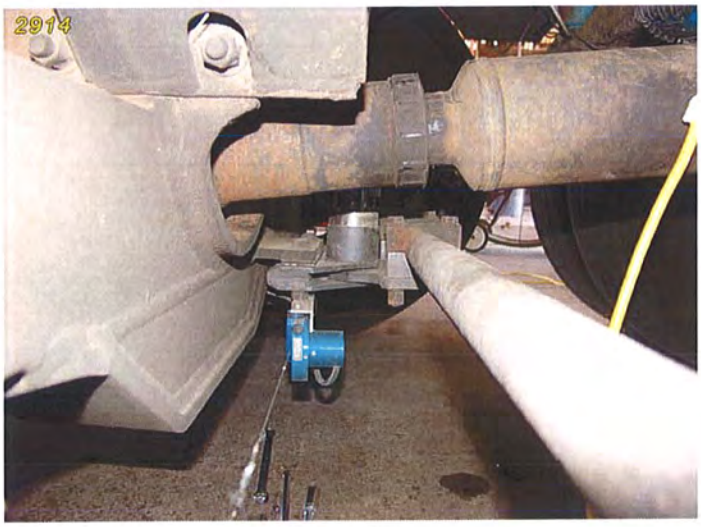
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Vehicle_2912.jpg



Vehicle_2913.jpg



Vehicle_2914.jpg

1995 MCI 102DL3 Vehicle Testing



Vehicle_2915.jpg



Vehicle_2916.jpg



Vehicle_2917.jpg



Vehicle_2918.jpg



Vehicle_2919.jpg



Vehicle_2920.jpg

1995 MCI 102DL3 Vehicle Testing



Vehicle_2921.jpg



Vehicle_2922.jpg



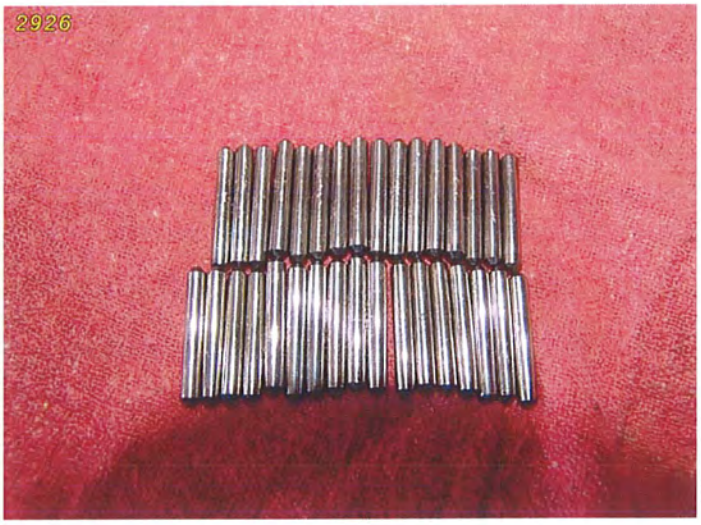
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Vehicle_2924.jpg



Vehicle_2925.jpg



Vehicle_2926.jpg

1995 MCI 102DL3 Vehicle Testing



Vehicle_2927.jpg



Vehicle_2928.jpg



Vehicle_2929.jpg



Vehicle_2930.jpg

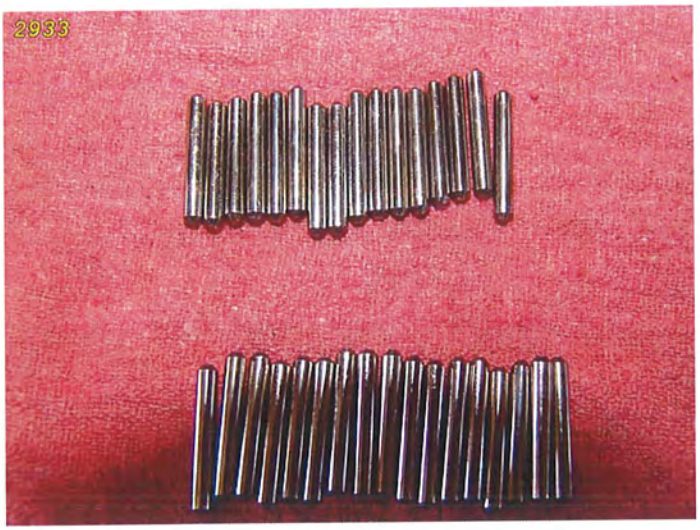


Vehicle_2931.jpg



Vehicle_2932.jpg

1995 MCI 102DL3 Vehicle Testing



Vehicle_2933.jpg



Vehicle_2934.jpg



Vehicle_2935.jpg



Vehicle_2936.jpg



Vehicle_2937.jpg



Vehicle_2938.jpg

1995 MCI 102DL3 Vehicle Testing

Driveshaft & U-Joints

Re-Installation

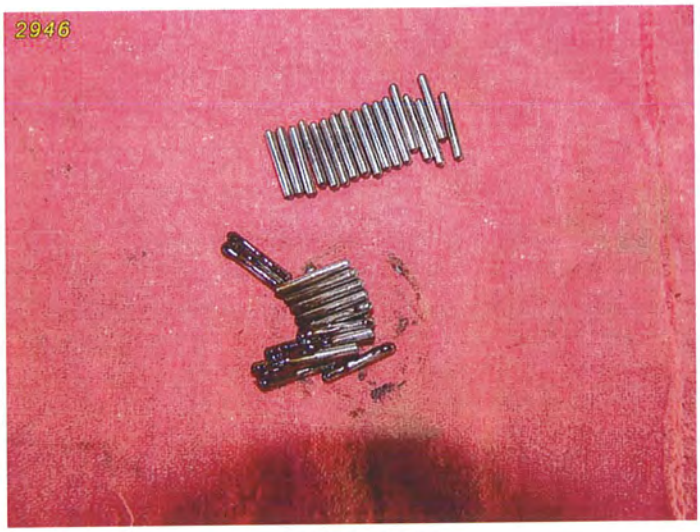
June 12-14, 2011

∂AG DYNAMIC ANALYSIS GROUP LLC

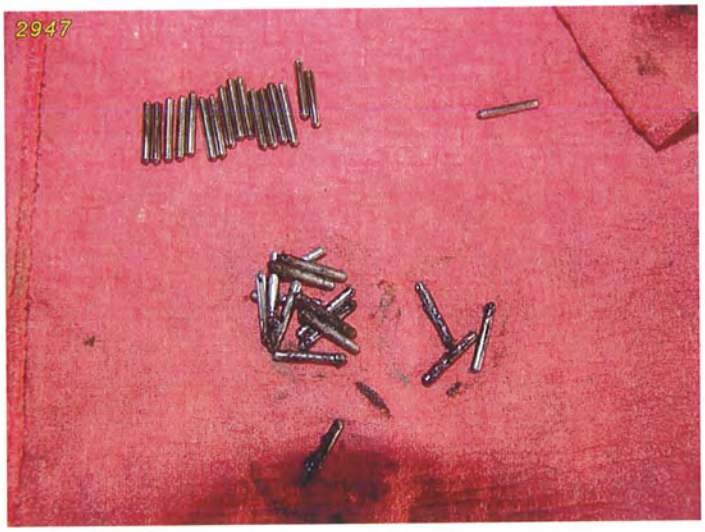
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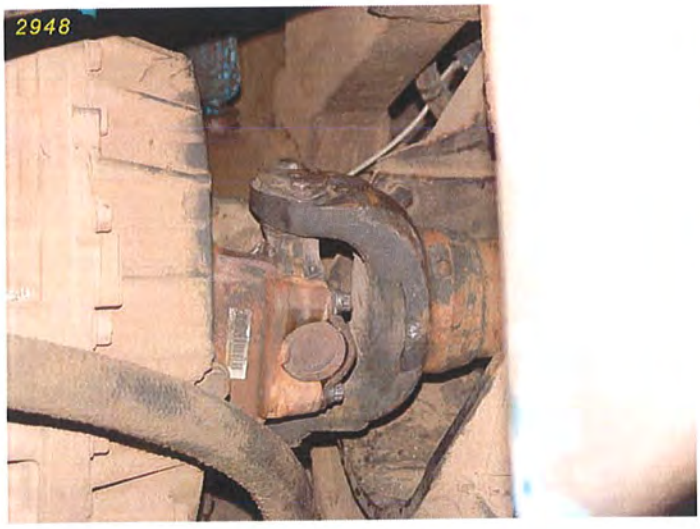
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Vehicle_2946.jpg



Vehicle_2947.jpg



Vehicle_2948.jpg



Vehicle_2949.jpg

1995 MCI 102DL3 Vehicle Testing



Vehicle_2950.jpg



Vehicle_2951.jpg



Vehicle_2952.jpg



Vehicle_2953.jpg



Vehicle_2954.jpg



Vehicle_2955.jpg

1995 MCI 102DL3 Vehicle Testing



Vehicle_2956.jpg



Vehicle_2957.jpg

1995 MCI 102DL3 Vehicle Testing

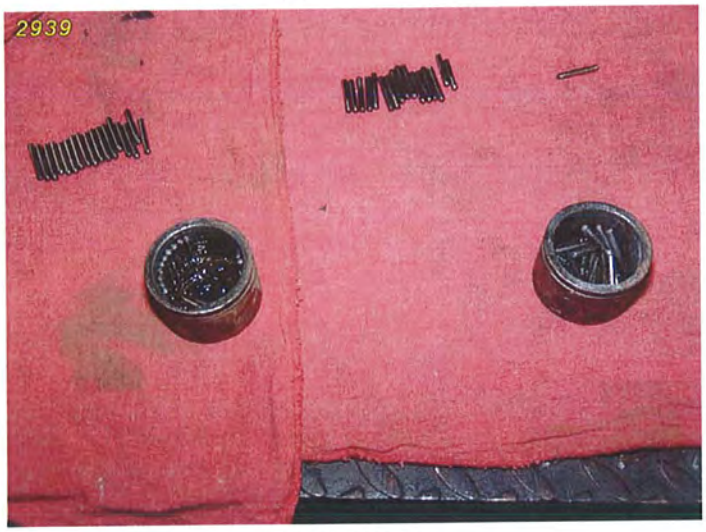
Driveshaft & U-Joints

Post-Test Inspection
First Sequence

June 12-14, 2011

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Vehicle.png



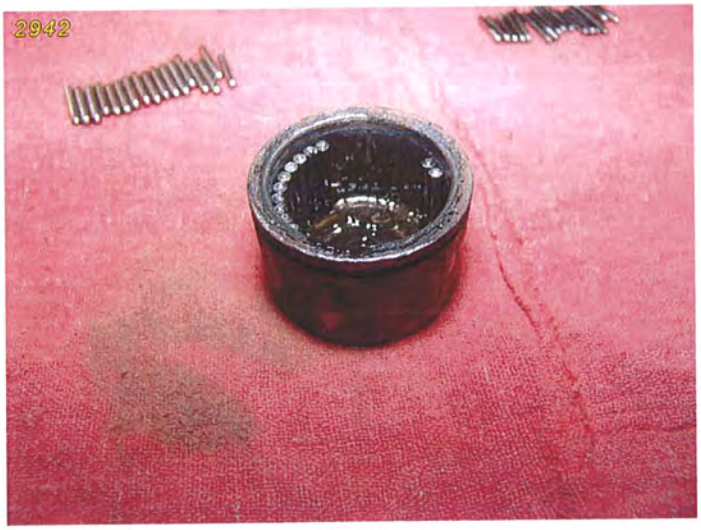
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Vehicle_2940.jpg



Vehicle_2941.jpg



Vehicle_2942.jpg



Vehicle_2943.jpg

1995 MCI 102DL3 Vehicle Testing



Vehicle_2944.jpg

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PE12-007

MCI

4-27-2012

Response 9

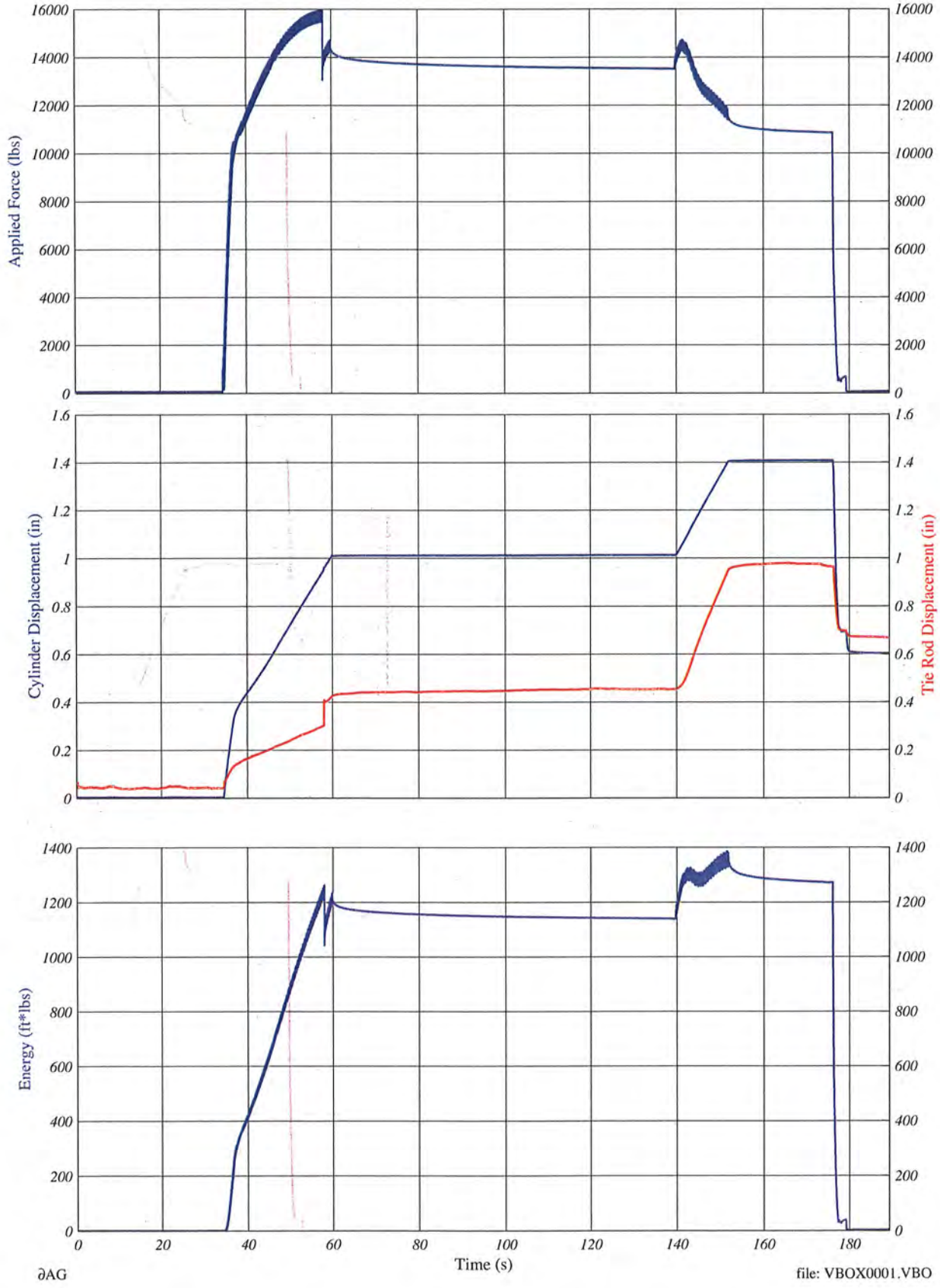
Data Plot

ALL-STATE LEGAL®
EXHIBIT
13

Tag Axle Laboratory Test

MCI 102DL3

Right Wheel Force Application



∂AG

file: VBOX0001.VBO