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UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

FORD MOTOR COMPANY,

Petitioner,

-vs-

PAICE, LLC & ABELL FOUNDATION, INC.,

Patent Owner.

U.S. Patent Nos. 7,237,634 and 7,104,347 IPR Case Nos. IPR2015-00722; IPR2015-00784; IPR2015-00787; IPR2015-00790; IPR2015-00791; IPR2015-00794 and IPR2015-00795

> Deposition of GREGORY DAVIS, PhD Wednesday, January 13, 2016 Southfield, Michigan

Reported by: Laura J. Steenbergh, CSR-3707, RPR, CRR, RMR Job no: 15629

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1	APPEARANCES:	1	Southfield, Michigan
2	MR. JOHN RONDINI, ESQ.	2	Wednesday, January 13, 2016
3	MR. ANDREW B. TURNER, ESQ.	3	About 9:20 a.m. 09:19:13AM
4	Brooks Kushman, P.C.	4	MR. LIVEDALEN: Good morning, Dr. Davis. 09:19:13AM
5	1000 Town Center, 22nd Floor	5	THE WITNESS: Good morning. 09:23:01AM
6	Southfield, Michigan 48075	6	GREGORY DAVIS, PhD, 09:23:01AM
7	(248) 358-4400	7	having first been duly sworn, was examined and testified 09:23:01AM
8	jrondini@brookskushman.com	8	on his oath as follows: 09:23:01AM
9	aturner@brookskushman.com	9	EXAMINATION BY MR. LIVEDALEN: 09:23:01AM
10	Appearing on behalf of the Petitioner.	10	Q. Could you please state your name for record? 09:23:01AM
11	repeating on behalf of the reduction.	11	A. Sure. It's Dr. Gregory W. Davis. 09:23:03AM
12	MR. BRIAN LIVEDALEN, ESQ.	12	Q. And you understand that you've taken an oath today? 09:23:06AM
13	Fish & Richardson, P.C.	13	A. Yes. 09:23:08AM
14	1425 K Street NW, 11th Floor	14	Q. And you intend to tell the truth? 09:23:09AM
15	Washington, DC 20005	15	A. Yes. 09:23:10AM
16	(202) 783-5050	16	Q. And so some administrative matters. Your counsel, or 09:23:10AM
17	livedalen@fr.com	17	John, and I spoke about dividing these up into basically 09:23:14AM
18	Appearing on behalf of the Patent Owner.	18	three tiers. So this first one's going to concern U.S. 09:23:18AM
19	Appearing on benan of the Fatent Owner.	19	Patent 7,237,634, so we'll call this the '634 patent. 09:23:25AM
20	ALSO PRESENT: Ms. Frances Keenan - Paice, LLC	20	A. Okay. 09:23:29AM
20	ALSO FRESENT. Mis. Flances Reenan - Face, LLC	21	Q. You're familiar with that, I believe? 09:23:29AM
22	* * * *	22	A. Yes. 09:23:31AM
23		23	Q. And we're going to divide these up further and just 09:23:31AM
23 24		24	address the declarations that you opined on with regard 09:23:35AM
24 25		25	to the Ibaraki reference. And that is, for the record, 09:23:38AM
25		25	· · · ·
	Page 3		Page 5
1	TABLE OF CONTENTS	1	U.S. Patent Number 5,789,882. 09:23:45AM
2		2	A. Okay. 09:23:49AM
3	Witness Page	3	Q. And so the numbers are 2015-00722, 2015-00784, 09:23:50AM
4	GREGORY DAVIS, PhD	4	2015-00787, 2015-00790, and 2015-00791. 09:24:03AM
5	EXAMINATION BY MR. LIVEDALEN: 4	5	MR. RONDINI: And just for the record, I know 09:24:09AM
6		6	we spoke off the record about this, I just wanted to put 09:24:11AM
7		7	on the record that you are aware that you did not Notice 09:24:14AM
8	INDEX TO EXHIBITS	8	the '722, even though that is one of '634. 09:24:18AM
9	(Exhibits attached to transcript)	9	MR. LIVEDALEN: Well, I'll have to go confirm 09:24:21AM
10		10	that, but I think we talked about it and it didn't seem 09:24:23AM
11	Exhibit Page	11	like an issue. 09:24:26AM
12	DAVIS EXHIBIT 1 U.S. Patent Number 6,116,363 6	12	MR. RONDINI: No. 09:24:27AM
13	DAVIS EXHIBIT 2 Declaration in IPR 2015-00784 9	13	MR. LIVEDALEN: Okay, great. 09:24:27AM
14	DAVIS EXHIBIT 3 U.S. Patent Number 7,237,634 18	14	BY MR. LIVEDALEN: 09:24:28AM
15	DAVIS EXHIBIT 4 Declaration in IPR 2015-00790 41	15	Q. And so, Dr. Davis, I know that's a lot of numbers, and I 09:24:28AM
16	DAVIS EXHIBIT 5 U.S. Patent Number 5,789,882 45	16	think John would have told me if I got one wrong, so 09:24:32AM
17		17	we'll proceed, if that's okay with you? 09:24:34AM
18		18 19	A. Yeah, that's fine. 09:24:36AM
19 20		20	Q. Okay. Sure. 09:24:37AM
20		20	So, Dr. Davis, I'll represent to you that one 09:24:43AM
21		21	or more of these matters also deals with a reference on 09:24:47AM
22		22	the Frank reference. Do you recall that one we talked 09:24:51AM
23		23	about a few months ago? 09:24:56AM
24		24	A. Yes, I do recall Frank. I think it was like a year ago. 09:24:58AMQ. Yeah. So that patent number is 6,116,363. Do you 09:25:02AM
25		- 40	

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1	recall that reference? Do you want me to give it to 09:25:07AM	1	168, where you can see a side-by-side comparison between 09:32:27AM
2	you? 09:25:15AM	2	the Figure 4 from Frank and Figure 11 from the Ibaraki 09:32:30AM
3	A. Let me just take a look. I think I brought a copy. 09:25:15AM	3	'882, and you can see the three general modes of 09:32:38AM
4	6,116,363, yes, I have. 09:25:18AM	4	operation. Again, the one highlighted in kind of an 09:32:41AM
5	Q. And do you recall, how does the Frank reference select 09:25:25AM	5	orange-ish pink color is the motor drive mode. In green 09:32:48AM
6	operating modes? 09:25:28AM	6	is engine drive mode, and in blue is the combination 09:32:52AM
7	MR. RONDINI: Objection to form. 09:25:30AM	7	engine-motor drive mode. And, again, if you look at 09:32:57AM
8	BY MR. LIVEDALEN: 09:25:34AM	8	Figure 11 from Ibaraki you can see that the 09:33:00AM
9	Q. Do you recall? 09:25:35AM	9	determination as to which mode to operate in is based on 09:33:05AM
10	A. Well, I've got a lot of material here. Perhaps it would 09:25:35AM	10	the instantaneous torque to propel the vehicle and the 09:33:07AM
11	go easier if you could direct me to a spot in one of 09:25:39AM	11	vehicle's speed, whereas in Frank he used a different 09:33:11AM
12	these pile of declarations here that I could take a look 09:25:45AM	12	control scheme in order to determine which mode he 09:33:14AM
13	at. 09:25:49AM	13	wanted to go into. In Frank he used the vehicle speed, 09:33:16AM
14	Q. Well, why don't we just mark Frank as an exhibit. 09:25:49AM	14	and the discharge of the battery, or the state of charge 09:33:21AM
15	DAVIS EXHIBIT 1 09:26:07AM	15	of the batteries to help make the decision. 09:33:25AM
16	U.S. Patent Number 6,116,363 09:26:07AM	16	MR. RONDINI: Just real quick, did we want to 09:33:28AM
17	WAS MARKED BY THE REPORTER 09:26:07AM	17	mark this as an exhibit? 09:33:31AM
18	FOR IDENTIFICATION 09:26:07AM	18	MR. LIVEDALEN: Yeah, why don't we go ahead an 09:33:32AM
19	BY MR. LIVEDALEN: 09:26:07AM	19	do that. Do you want to mark his personal copy, or 09:33:33AM
20	Q. So for the record, Exhibit 1 is U.S. Patent Number 09:26:09AM	20	MR. RONDINI: Do you want to 09:33:38AM
21	6,116,363, Exhibit 3 to Frank. Does that look right to 09:26:14AM	21	THE WITNESS: This is fine. I don't know that 09:33:39AM
22	you, Dr. Davis? 09:26:22AM	22	I have anything in here. 09:33:40AM
23	A. Yes. 09:26:24AM	23	MR. RONDINI: That's fine then. 09:33:42AM
24	Q. And if you look at Figure 4, does that refresh your 09:26:33AM	24	
25	recollection as far as what criteria Frank is using to 09:26:48AM	25	
	Page 7		Page 9
1	select operating modes? 09:26:51AM	1	DAVIS EXHIBIT 2 09:33:58AM
2	A. Yes, I think I did talk about that in my declarations. 09:26:53AM	2	Declaration in IPR 2015-00784 09:33:58AM
3	Let's see if I can find that. 09:27:38AM	3	WAS MARKED BY THE REPORTER 09:33:58AM
4	Q. Which declaration are you looking at? 09:30:45AM	4	FOR IDENTIFICATION 09:33:59AM
5	A. I'm looking at the IPR case number 2015-00784. 09:30:48AM	5	BY MR. LIVEDALEN: 09:33:59AM
6	Q. Okay. Maybe does paragraph 384 help at all? 09:30:58AM	6	Q. All right. So if I understand you correctly, you said 09:34:03AM
7	A. I actually just turned to that page. 09:31:03AM	7	that the Frank reference uses speed and battery 09:34:05AM
8	Q. All right. We're on the same page. 09:31:05AM	8	discharge to switch modes, is that right? 09:34:10AM
9	A. Can you give me the question again? 09:31:18AM	9	A. Yeah, or the battery state of charge or depth of 09:34:13AM
10	Q. If I can remember. 09:31:22AM	10	discharge. 09:34:17AM
11	Let me just ask you this, what criteria does 09:31:24AM	11	Q. And would one of skill in the art understand the Ibaraki 09:34:17AM
12	the Frank reference evaluate to determine which 09:31:27AM	12	'882 to also use speed switch modes? 09:34:21AM
13	operating mode to select? 09:31:30AM	13	A. No. The Ibaraki, as I just explained, and you can see 09:34:24AM
14	A. Well, what you can see is if you look on, you know, 09:31:33AM	14	it in the side-by-side comparison on page 168 of my 09:34:27AM
15	starting on page 165, continuing on for, I think, a 09:31:37AM	15	declaration, Ibaraki uses, if you look at the Y axis, 09:34:30AM
16	couple of pages, that you can see there's lots of 09:31:43AM	16	instead of seeing, in the Frank figure on the left, you 09:34:34AM
17	similarities between the hybrid electric vehicles 09:31:46AM	17	see speed on the Y axis. On the Y axis or the vertical 09:34:37AM
18	disclosed here, and that like the Ibaraki '882, the 09:31:53AM	18	axis of Ibaraki on the right, Figure 11, you see the 09:34:42AM
19	Frank has mode of operation of engine only mode, 09:31:58AM	19	vehicle drive torque. So Ibaraki is using the torque 09:34:45AM
20	electric motor only mode, and an engine-motor mode. But 09:32:00AM	20	and the vehicle speed to make the determination, whereas 09:34:52AM
21	unlike the control strategy used by the Ibaraki '882, 09:32:04AM	21	Frank was using the speed on the Y axis and the depth of 09:34:54AM
22	which relies on the instantaneous torque to propel the 09:32:11AM	22	discharge on the X axis. 09:34:59AM
		23	Q. So one of skill in the art would not conclude that 09:35:00AM
23	vehicle and the vehicle speed to make a determination 09:32:16AM		-
	about which mode to switch into, Frank uses a different 09:32:18AM approach. And it's probably best if we look at page 09:32:22AM	24 25	Ibaraki '882 is comparing vehicle speed to a speed 09:35:03AM threshold, right? 09:35:07AM

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	Page 10		Page 12
1	MR. RONDINI: Objection to form, vague. 09:35:08AM	1	to a speed threshold? 09:38:16AM
2	THE WITNESS: I'm not sure I understand your 09:35:09AM	2	MR. RONDINI: Objection, asked and answered. 09:38:18AM
3	question. 09:35:14AM	3	THE WITNESS: Again, it's making the 09:38:20AM
4	BY MR. LIVEDALEN: 09:35:17AM	4	determination, it set up the boundaries, if you will, 09:38:24AM
5	Q. What don't you understand about it? 09:35:18AM	5	between the different modes based on the vehicle speed 09:38:27AM
6	A. I guess I just I'm not sure I understand what you're 09:35:19AM	6	and the depth of discharge. 09:38:30AM
7	asking there. 09:35:25AM	7	BY MR. LIVEDALEN: 09:38:33AM
8	Q. So in Frank you agree with me, right, that Figure 4 of 09:35:26AM	8	Q. Okay. Now, looking at Ibaraki '882, does Ibaraki '882 09:38:38AM
9	Frank discloses evaluating the vehicle speed to a speed 09:35:32AM	9	compare vehicle speed to a speed threshold? 09:38:43AM
10	threshold to select an operating mode? 09:35:38AM	10	A. Again, Ibaraki is probably clearest if you look at the 09:38:45AM
11	MR. RONDINI: Objection, misstates testimony, 09:35:41AM	11	figures that I have annotated on page 168 of my report, 09:38:50AM
12	vague. 09:35:43AM	12	you can see that the Ibaraki uses the vehicle drive 09:38:54AM
13	THE WITNESS: I'm not again, I think maybe 09:35:46AM	13	torque and the vehicle speed, and it's to help lay out 09:38:59AM
14	it's clearer if we look at my text and maybe that would 09:35:51AM	14	the boundaries between the modes. 09:39:08AM
15	clear it up a little bit. If you look at let's see, 09:35:57AM	15	Q. So it does make a comparison between vehicle speed and 09:39:09AM
16	probably the description I have 09:36:04AM	16	the speed threshold? 09:39:13AM
17	BY MR. LIVEDALEN: 09:36:07AM	17	A. So it's looking at the torque at a given speed, and 09:39:14AM
18	Q. It's really a simple question. Does Frank 09:36:07AM	18	perhaps I think I have some other annotated figure at 09:39:19AM
19	A. Sorry, I just don't understand. 09:36:11AM	19	Figure 11. 09:39:24AM
20	Q. Okay. So you've seen Figure 4, right? 09:36:13AM	20	Well, perhaps a better figure to look at that 09:40:22AM
21	A. Yes. 09:36:14AM	21	might help clear up any issue here is if we look at 09:40:25AM
22	Q. The Y axis is what? 09:36:15AM	22	page 87 of my declaration, or one example of an 09:40:27AM
23	A. It's the vehicle speed. 09:36:18AM	23	annotated Figure 11, and you can see I've tried to lay 09:40:32AM
24	Q. All right and at below 113 kilometers per hour, what 09:36:22AM	24	out some of the conditions here, and you can see 09:40:36AM
25	mode is being used? 09:36:28AM	25	looks like you're still turning and so you can see 09:40:48AM
	Page 11		Page 13
1	A. It depends. 09:36:29AM	1	the basic strategy that Ibaraki is employing here is 09:40:50AM
2	Q. Well, between 0 and 50 percent battery depth of 09:36:35AM	2	it's determining the vehicle speed and the required 09:40:54AM
3	discharge what mode is being used in under 13 kilometers 09:36:42AM	3	torque to propel the vehicle, which I've annotated here, 09:40:58AM
4	per hour? 09:36:45AM	4	I called that TL on the diagram. And then in order to 09:41:03AM
5	A. Again, it still depends. 09:36:46AM	5	make the mode determination it's comparing that value 09:41:06AM
6	Q. Okay. So looking at Figure 4, you cannot tell me 09:36:48AM	6	with the setpoint, which on this curve that I'm showing 09:41:11AM
7	whether or not Frank uses strike that. 09:36:52AM	7	is a setpoint to transition to engine drive mode only, 09:41:15AM
8	Looking at Figure 4, you cannot tell me 09:36:55AM	8	and so it's making comparison that TL is greater than 09:41:20AM
9	whether or not Frank compares vehicle speed to a speed 09:36:57AM	9	that setpoint. And the different setpoints, they vary 09:41:24AM
10	threshold or to select operating modes? 09:37:00AM	10	as a function of speed in Ibaraki, and they're kind of 09:41:28AM
1		11	
11	MR. RONDINI: Objection, vague. 09:37:02AM		shown as that line B, that curved line B would be the 09:41:34AM
11 12	MR. RONDINI:Objection, vague.09:37:02AMTHE WITNESS:Again, it uses both vehicle09:37:09AM	12	shown as that line B, that curved line B would be the09:41:34AMkind of boundary value or values in which you would09:41:39AM
12	THE WITNESS: Again, it uses both vehicle 09:37:09AM	12	kind of boundary value or values in which you would 09:41:39AM
12 13	THE WITNESS: Again, it uses both vehicle09:37:09AMspeed, as I described before, and the battery depth of09:37:11AM	12 13	kind of boundary value or values in which you would09:41:39AMswitch to engine mode, engine drive mode.09:41:44AM
12 13 14	THE WITNESS: Again, it uses both vehicle09:37:09AMspeed, as I described before, and the battery depth of09:37:11AMdischarge in order to determine the locations where it's09:37:14AM	12 13 14	kind of boundary value or values in which you would09:41:39AMswitch to engine mode, engine drive mode.09:41:44AMQ. So at a point along speed V1 is it your opinion that09:41:48AM
12 13 14 15	THE WITNESS: Again, it uses both vehicle09:37:09AMspeed, as I described before, and the battery depth of09:37:11AMdischarge in order to determine the locations where it's09:37:14AMgoing to switch modes.09:37:21AM	12 13 14 15	kind of boundary value or values in which you would09:41:39AMswitch to engine mode, engine drive mode.09:41:44AMQ. So at a point along speed V1 is it your opinion that there's a comparison between a demand torque and a09:41:48AM
12 13 14 15 16 17 18	THE WITNESS: Again, it uses both vehicle09:37:09AMspeed, as I described before, and the battery depth of09:37:11AMdischarge in order to determine the locations where it's09:37:14AMgoing to switch modes.09:37:21AMBY MR. LIVEDALEN:09:37:23AM	12 13 14 15 16	kind of boundary value or values in which you would09:41:39AMswitch to engine mode, engine drive mode.09:41:44AMQ. So at a point along speed V1 is it your opinion that there's a comparison between a demand torque and a torque threshold?09:41:55AM
12 13 14 15 16 17 18 19	THE WITNESS: Again, it uses both vehicle09:37:09AMspeed, as I described before, and the battery depth of09:37:11AMdischarge in order to determine the locations where it's09:37:11AMgoing to switch modes.09:37:21AMBY MR. LIVEDALEN:09:37:23AMQ. Does it ever compare vehicle speed to a speed threshold09:37:23AMto select an operating mode?09:37:28AMA. Well, it defines its boundaries between modes based on09:37:30AM	12 13 14 15 16 17 18 19	kind of boundary value or values in which you would 09:41:39AM switch to engine mode, engine drive mode. 09:41:44AM Q. So at a point along speed V1 is it your opinion that there's a comparison between a demand torque and a 09:41:55AM torque threshold? 09:42:01AW MR. RONDINI: Objection, vague, misstates 09:42:03AM testimony. 09:42:07AM THE WITNESS: I think what I said is that 09:42:15AM
12 13 14 15 16 17 18 19 20	THE WITNESS: Again, it uses both vehicle 09:37:09AM speed, as I described before, and the battery depth of 09:37:11AM discharge in order to determine the locations where it's 09:37:11AM going to switch modes. 09:37:21AM BY MR. LIVEDALEN: 09:37:23AM Q. Does it ever compare vehicle speed to a speed threshold 09:37:23AM A. Well, it defines its boundaries between modes based on 09:37:30AM the vehicle speed and the depth of discharge. So, 09:37:55AM	12 13 14 15 16 17 18	kind of boundary value or values in which you would 09:41:39AM switch to engine mode, engine drive mode. 09:41:44AM Q. So at a point along speed V1 is it your opinion that there's a comparison between a demand torque and a 09:41:55AM torque threshold? 09:42:01AM MR. RONDINI: Objection, vague, misstates 09:42:03AM testimony. 09:42:07AM THE WITNESS: I think what I said is that 09:42:15AM there is the the curve is set up using the torque, 09:42:18AM
12 13 14 15 16 17 18 19 20 21	THE WITNESS: Again, it uses both vehicle09:37:09AMspeed, as I described before, and the battery depth of09:37:11AMdischarge in order to determine the locations where it's09:37:11AMgoing to switch modes.09:37:21AMBY MR. LIVEDALEN:09:37:23AMQ. Does it ever compare vehicle speed to a speed threshold09:37:23AMQ. Does it ever compare vehicle speed to a speed threshold09:37:23AMA. Well, it defines its boundaries between modes based on09:37:30AMthe vehicle speed and the depth of discharge. So,09:37:55AMagain, the comparison that's being made is looking at09:37:58AM	12 13 14 15 16 17 18 19 20 21	kind of boundary value or values in which you would 09:41:39AM switch to engine mode, engine drive mode. 09:41:44AM Q. So at a point along speed V1 is it your opinion that 09:41:48AM there's a comparison between a demand torque and a 09:41:55AM torque threshold? 09:42:01AW MR. RONDINI: Objection, vague, misstates 09:42:03AM testimony. 09:42:07AM THE WITNESS: I think what I said is that 09:42:15AM there is the the curve is set up using the torque, 09:42:18AM the vehicle drive torque or the instantaneous torque to 09:42:25AM
12 13 14 15 16 17 18 19 20	THE WITNESS: Again, it uses both vehicle09:37:09AMspeed, as I described before, and the battery depth of09:37:11AMdischarge in order to determine the locations where it's09:37:14AMgoing to switch modes.09:37:21AMBY MR. LIVEDALEN:09:37:23AMQ. Does it ever compare vehicle speed to a speed threshold09:37:23AMQ. Does it ever compare vehicle speed to a speed threshold09:37:23AMA. Well, it defines its boundaries between modes based on09:37:55AMagain, the comparison that's being made is looking at09:37:58AMthe vehicle speed at a particular depth of discharge or09:38:03AM	12 13 14 15 16 17 18 19 20	kind of boundary value or values in which you would09:41:39AMswitch to engine mode, engine drive mode.09:41:44AMQ. So at a point along speed V1 is it your opinion that there's a comparison between a demand torque and a torque threshold?09:41:45AMMR. RONDINI: Objection, vague, misstates testimony.09:42:03AMTHE WITNESS: I think what I said is that there is the the curve is set up using the torque, the vehicle drive torque or the instantaneous torque to propel the vehicle and vehicle speed so that there are09:42:25AM
12 13 14 15 16 17 18 19 20 21 22 23	THE WITNESS: Again, it uses both vehicle09:37:09AMspeed, as I described before, and the battery depth of09:37:11AMdischarge in order to determine the locations where it's09:37:14AMgoing to switch modes.09:37:21AMBY MR. LIVEDALEN:09:37:23AMQ. Does it ever compare vehicle speed to a speed threshold09:37:23AMA. Well, it defines its boundaries between modes based on09:37:55AMagain, the comparison that's being made is looking at09:37:55AMthe vehicle speed at a particular depth of discharge or09:38:03AMcondition of the battery in order to decide which mode09:38:06AM	12 13 14 15 16 17 18 19 20 21 22 23	kind of boundary value or values in which you would 09:41:39AM switch to engine mode, engine drive mode. 09:41:44AM Q. So at a point along speed V1 is it your opinion that 09:41:48AM there's a comparison between a demand torque and a 09:41:55AM torque threshold? 09:42:01AW MR. RONDINI: Objection, vague, misstates 09:42:03AM testimony. 09:42:07AW THE WITNESS: I think what I said is that 09:42:15AM there is the the curve is set up using the torque, 09:42:15AM there is the the curve is set up using the torque, 09:42:25AM propel the vehicle and vehicle speed so that there are 09:42:29AM multiple setpoints. The setpoints vary as a function of 09:42:36AM
12 13 14 15 16 17 18 19 20 21 22	THE WITNESS: Again, it uses both vehicle09:37:09AMspeed, as I described before, and the battery depth of09:37:11AMdischarge in order to determine the locations where it's09:37:14AMgoing to switch modes.09:37:21AMBY MR. LIVEDALEN:09:37:23AMQ. Does it ever compare vehicle speed to a speed threshold09:37:23AMQ. Does it ever compare vehicle speed to a speed threshold09:37:23AMA. Well, it defines its boundaries between modes based on09:37:55AMagain, the comparison that's being made is looking at09:37:58AMthe vehicle speed at a particular depth of discharge or09:38:03AM	12 13 14 15 16 17 18 19 20 21 22	kind of boundary value or values in which you would09:41:39AMswitch to engine mode, engine drive mode.09:41:44AMQ. So at a point along speed V1 is it your opinion that there's a comparison between a demand torque and a torque threshold?09:41:45AMMR. RONDINI: Objection, vague, misstates testimony.09:42:03AMTHE WITNESS: I think what I said is that there is the the curve is set up using the torque, the vehicle drive torque or the instantaneous torque to propel the vehicle and vehicle speed so that there are09:42:25AM

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1	will determine the value, TL, the torque, at that speed 09:42:49AM	1	vehicle, which is indicated by TL if we go back to that 09:45:47AM
2	and make a comparison as to whether that is greater than 09:42:56AM	2	Figure 11 I have annotated on page 87 and you're 09:45:51AM
3	the setpoint or not greater than the setpoint. And in 09:43:00AM	3	comparing to see if it's greater than that setpoint at 09:45:55AM
4	this case it's greater than the setpoints which are 09:43:05AM	4	the same vehicle speed. And if it is, then you're going 09:45:58AM
5	defined by curve B, and it's less than the setpoint that 09:43:10AM	5	to consider engine drive mode only. You're also going 09:46:03AM
6	would be defined on the curve of multiple setpoints of 09:43:16AM	6	to look then to see if it's less than the setpoint which 09:46:08AM
7	curve C. So it's looking at the setpoint, SP, that I 09:43:23AM	7	is laid out on I called it C1, and if it's between 09:46:13AM
8	have labeled, and the value I called C1, and it's making 09:43:27AM	8	those two values you're going to go into engine drive 09:46:18AM
9	a determination in that case that it should be in engine 09:43:31AM	9	mode. So it's clearly looking at the torque required to 09:46:21AM
10	drive mode. 09:43:35AM	10	propel the vehicle and comparing it to the setpoint. 09:46:27AM
11	BY MR. LIVEDALEN: 09:43:35AM	11	BY MR. LIVEDALEN: 09:46:30AM
12	Q. So is there or isn't there a comparison between a demand 09:43:36AM	12	Q. So you're telling me there is a comparison? 09:46:30AM
13	torque and a torque threshold? 09:43:40AM	13	A. I think I have been telling you that, that it's a 09:46:33AM
14	MR. RONDINI: Objection, compound. 09:43:42AM	14	comparison between those values. 09:46:37AM
15	THE WITNESS: I think I've already answered 09:43:51AM	15	Q. Okay. I'm not trying to trick you, I'm just trying to 09:46:38AM
16	that question a couple of times now. 09:44:00AM	16	get trying to make sure I understand your opinion. 09:46:41AM
17	BY MR. LIVEDALEN: 09:44:03AM	17	So you would agree with me then or strike 09:46:45AM
18	Q. My answer calls for a yes or no answer, so is it yes or 09:44:04AM	18	that. 09:46:45AM
19	no? 09:44:07AM	19	So is it your opinion that Ibaraki '882 09:46:51AM
20	MR. RONDINI: Objection, vague, misstates 09:44:09AM	20	compares a torque demand to a torque threshold? 09:46:53AM
21	testimony. 09:44:13AM	21	MR. RONDINI: Objection, asked and answered. 09:46:56AM
22	THE WITNESS: Perhaps I don't understand your 09:44:19AM	22	BY MR. LIVEDALEN: 09:46:59AM
23	question. 09:44:20AM	23	Q. I think your answer's yes. I don't know why 09:47:01AM
24	BY MR. LIVEDALEN: 09:44:21AM	24	A. Perhaps I'm just I didn't use the exact terms that 09:47:03AM
25	Q. Sitting here today, can you tell me whether or not 09:44:21AM	25	you're using in your question, so perhaps maybe that's 09:47:05AM
	Page 15		Page 17
1	Ibaraki '882 compares a torque demand to a torque 09:44:23AM	1	where there's some miscommunication. It definitely 09:47:11AM
2	threshold? If you can't answer, if you don't know, 09:44:29AM	2	compares its controller determination of the 09:47:17AM
3	that's fine. 09:44:38AM	3	instantaneous drive torque to propel the vehicle to the 09:47:18AM
4	A. I guess I don't understand your question. 09:44:38AM	4	setpoints. 09:47:22AM
5	Q. Okay. So sitting here today you can't tell me whether 09:44:40AM	5	Q. So you said that in your opinion there's a setpoint at 09:47:22AM
6	Ibaraki '882 compares a torque demand to a torque 09:44:44AM	6	B, along curve B at B1, right, that's where you're 09:47:27AM
7	threshold, is that right? 09:44:47AM	7	identifying your setpoint? 09:47:35AM
8	A. Again, I don't understand your question. Because I 09:44:48AM	8	A. Yes, that's one particular setpoint. That's an example 09:47:36AM
9	think I've already answered it a couple of times, but 09:44:51AM	9	at that particular vehicle speed. 09:47:39AM
10	apparently I haven't. So perhaps we're not 09:44:55AM	10	Q. And at that precise point does Ibaraki compare the 09:47:40AM
11	communicating effectively here. 09:45:01AM	11	vehicle speed to a speed threshold? 09:47:44AM
12	Q. So you can't answer my question? 09:45:02AM	12	A. You know, it's looking at that particular point in order 09:47:49AM
13	A. No. I think I already have actually, that I kind of 09:45:03AM	13	to determine what the setpoint torque value would be. 09:47:52AM
14	tried to explain how Ibaraki works here. 09:45:07AM	14	Q. There's no comparison 09:47:56AM
15	Q. I appreciate your long explanations, but I just want an 09:45:13AM	15	A. And then it's making a comparison. 09:47:58AM
16	answer to my question. And if the answer is I don't 09:45:17AM	16	Q. There's no comparison of a speed, of a vehicle speed to 09:48:00AM
17	know, then that's perfectly fine. So again, I'll repeat 09:45:20AM	17	a speed threshold? 09:48:04AM
18	the question. 09:45:23AM	18	A. I don't believe so, there is a speed threshold there. I 09:48:05AM
19	Sitting here today can you tell me whether or 09:45:23AM	19	think later on, you know, obviously over the full 09:48:09AM
20	not Ibaraki '882 compares a torque demand to a torque 09:45:26AM	20	operating range of the vehicle, speed is a concern. 09:48:12AM
21 22	threshold? 09:45:29AM MR. RONDINI: Objection, asked and answered. 09:45:30AM	21 22	Q. Okay. But you would not consider Ibaraki '882 to 09:48:17AM disclose a comparison of vehicle speed to a speed 09:48:21AM
22	MR. RONDINI: Objection, asked and answered. 09:45:30AM THE WITNESS: Again, I think I did say that, 09:45:31AM	22	threshold, are you? 09:48:24AM
23		23	
24		2.4	-
24 25	that the the particular example here, you're looking 09:45:37AM at the instantaneous torque required to propel the 09:45:42AM	24 25	A. At this example that I show here, it's using the speed 09:48:25AM in order to determine what the setpoint value should be 09:48:28AM

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